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THE THIRD EDITION
EVERYMAN'S ENCYCLOPÆDIA
IN TWELVE VOLUMES

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VOLUME TWO
BALANOGLOSSUS — BULFORD

EDITED BY ATHELSTAN RIDGWAY, LL.B.

THE THIRD EDITION

EVERYMAN'S
ENCYCLOPÆDIA

IN TWELVE VOLUMES

VOLUME TWO



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ABBREVIATIONS

The titles of subjects, which are printed first in bold type, have been abbreviated within each article to the initial letter or letters.

ac., acre(s).
 agric., agricultural.
 ambas., ambassador(s).
 Amer., American.
 anct., ancient.
 ann., annual.
 arron., arrondissement.
 A.-S., Anglo-Saxon.
 A.V., Authorised Version.
 b., born.
 Biog. Dic., Biographical Dictionary.
 bor., borough.
 bp., birthplace.
 Brit., British.
 C., Centigrade.
 c., about.
 cap., capital.
 cf., compare.
 co., county.
 com., commune.
 cub. ft., cubic feet.
 d., died.
 Dan., Danish.
 dept., department.
 dist., district.
 div., division.
 E., east; eastern.
 eccles., ecclesiastical.
 ed., edition; edited.
 e.g., for example.
 Ency. Brit., Encyclopædia Britannica.
 Eng., English.
 estab., established; establishment.
 F., Fahrenheit.
 fl., flourished.
 fort. tn., fortified town.
 Fr., French.
 ft., feet.
 Ger., German.
 Gk., Greek.
 gov., government.
 Heb., Hebrew.
 hist., history.
 horticult., horticultural.
 h.p., horse-power.
 hr., hour.
 i.e., that is.
 in., inch(es).
 inhab., inhabitant(s).

is., island(s).
 It., Italian.
 Jap., Japanese.
 jour., journal.
 Lat., Latin.
 lat., latitude.
 lb., pound(s).
 l. b., left bank.
 long., longitude.
 m., mile(s).
 manuf., manufacture.
 min., minute(s).
 mrkt. tn., market town.
 MS., manuscript.
 mt., mount; mountain.
 N., north; northern.
 N.T., New Testament.
 O.E., Old English.
 O.F., Old French.
 O.T., Old Testament.
 oz., ounce(s).
 par., parish.
 parl., parliamentary.
 pop., population.
 prin., principal.
 prof., professor.
 prov., province; provincial.
 pub., published; publication.
 q.v., which see.
 R., riv., river.
 r. b., right bank.
 Rom., Roman.
 R.V., Revised Version.
 S., south; southern.
 sec., second(s).
 sev., several.
 Sp., Spanish.
 sp. gr., specific gravity.
 sq. m., square mile(s).
 temp., temperature.
 ter., territory.
 tn., town.
 trans., translated; translation.
 trib., tributary.
 univ., university.
 urb., urban.
 vil., village.
 vol., volume.
 W., west; western.
 Wm., William.
 yd., yard.

The article ABBREVIATIONS contains a list of those in general use.
See also ABBREVIATION (music) and ELEMENTS (chemical symbols).

Balanoglossus (Gk. *βαλανος*, gland; *γλῶσσα*, tongue), the typical genus of the *Balanoglossidae* of the class *Enteropneusta*. It has a worm-like, elongated body, breathes by means of gill-slits, and bears in the anterior region a curiously shaped proboscis which serves as an organ of locomotion. It inhabits the sand of various seas, and about 10 species are known.

Balanophoraceæ, an order of parasitic dicotyledons comprising many tropical species. The chief genus is *Balanophora*, which consists of 11 species growing in India.

Balantia (Gk. *βαλάντιον*, bag or pouch), the generic name given by the Ger. naturalist Illiger to those marsupials commonly called phalangers (*q.v.*).

Balanus (Gk. *βαλανος*, acorn, gland), the scientific name by which is indicated the barnacle (*q.v.*) or acorn-shell (*q.v.*).

Balacan, or **Baloang**, tn. in the prov. of La Union, Luzon, Philippines, 22 m. N. of San Fernando; pop. 27,000.

Balard, Antoine Jérôme (1802-76), Fr. chemist, was *b.* at Montpellier, and *d.* in Paris. He became prof. of chem. in his native tn., and in 1826 he discovered bromine (*q.v.*). In 1844 he was elected member of the Academy of Sciences, and in 1851 was appointed prof. of chem. in the College of France.

Balaruc, or **Balaruc-les-Bains**, vil. near the tn. of Frontignan, in the dept. of Hérault, France, celebrated for its hot sulphur springs, near the border of the Étang de Thau. Opposite the baths there is an isolated rock, called Rocairals or Roquerol, the base of which is covered with mussels and other shell-fish. Pop. 1800.

Balashov, tn. in region of, and 125 m. W. of Saratov, Russia, on the l. b. of the Khoper, a trib. of the Don. An agric. dist. Pop. 23,000.

Balasinor, dist. of India situated in Gujarat, Bombay. Area, 189 sq. m.; pop. 40,000.

Balasore, or **Balasor**: 1. Dist. of Orissa, India, on the bay of Bengal. Rice, jute, and oil seed are produced. Area, 2068 sq. m.; pop. 980,000. 2. Tn., cap. of the dist. of B., on the Burabullung R., 16 m. from its mouth. It was the first Eng. settlement in E. India (1642), and afterwards the seat of factories belonging to the Portuguese, Dutch, and Danes in succession. The Danes sold their interest to the Eng. in 1846. It has dry docks and a coasting trade. Pop. 21,300. 3. Peak, 6762 ft. high, in the W. Ghats, Malabar dist., Madras, India.

Balas Ruby, term used to designate the rose-red varieties of spinel (*q.v.*). It occurs as crystals, softer than those of the oriental ruby, a much more valuable stone. They are found chiefly in India.

Balassa, Count Valentin (1551-94), Hungarian poet, wrote Lat. poems and some popular lyrics in his own tongue for which he invented a new metre. He fell at the storming of Gran, fighting against the Turks.

Balassa-Gyarmat, cap. of Nograd, Hungary, 40 m. N.N.E. of Budapest; pop. 11,000.

Balata, juice or latex obtained from *Minusops balata*, the bullet or bully tree, belonging to the same order, Sapotaceæ, as the Malay gutta-percha tree (or *Dichopsta*). B. is used as an inferior substitute for caoutchouc and gutta-percha, but the presence of resin in the latex renders it useless for electrical purposes. It is used for belting, on account of its strength. The B.-tree grows in the W. Indies, S. America, and in Guiana.

Balaton, lake in Hungary, S. of the Bakony Wald, 55 m. S.W. of Budapest. The S. shore is bordered by marshy plains and downs. It is the largest lake in central Europe, 48 m. long and 7½-10 m. broad, area 266 sq. m. Many streams fall into the lake, and with the beauty of its scenery, especially near the Tibany peninsula, it became a popular bathing and fishing resort. It was the scene of desperate fighting during the Russian invasion of Hungary in 1944. See EASTERN FRONT, or RUSSO-GERMAN CAMPAIGNS, IN SECOND WORLD WAR.

Balausta, fruit of the pomegranate; in appearance a golden colour, about the size of an ordinary orange, and the rind is thick, enclosing numerous seeds, each embedded separately in pulp surrounded by a cell-wall. This pulp is in reality the outer layers of the seed-coats, and it is employed in the manuf. of cooling drinks.

Balayan, seaport of the is. of Luzon, Philippines, in the prov. of Batangas. It is situated 30 m. N.W. of Batangas, and at the N.W. end of the bay of B., which is deep, but open to southerly winds. Mt. B. (alt. about 2675 ft.) is 3 m. to the N.E. Pop. 25,000.

Balbec, see BAALBEK.

Balbi, Adriano (1782-1848), It. geographer and statistician, *b.* at Venice; became prof. of geography at Murano on the publication in 1808 of his *Survey of Political Geography*. In 1813 he was appointed to the customs at Venice. His best-known works were *Atlas ethnographique du globe*, 1826, and the *Abbrégé de géographie*, 1832. His son, Eugenio (1812-84), ed. his writings, 1841, and was also a geographer.

Balbinus, Decimus Cælius Calvinus (A.D. 237-38), Rom. emperor. On the death of the two Gordians in Africa, B. and Maximus (Clodius Pupienus) were chosen joint emperors to continue the opposition to the usurping Emperor

Maximinus, then with the army in Pannonia. Their powers were equal, and each bore the titles of pontifex maximus and princeps senatus. Maximinus invaded Italy, but was assassinated by his soldiers at Aquileia. On the approaching departure of Maximus against the Persians and of B. against the Goths, the Praetorian guard, adherents of the dead Maximinus, put the two emperors to death. B. had gained some reputation as a poet and orator, and both he and his colleague were of the highest rank and character in the senate.

Balbo, Count Cesare (1789-1853), It. statesman and man of letters, was b. at Turin. Napoleon Bonaparte created him auditor to the Council of State at the age of 18 by reason of his great business capacity, and when the peace of Vienna gave the provs. of Illyria to France in 1812 he was appointed to the commission which managed the affairs of that country. He vacated his appointment on the fall of Napoleon, and busied himself with literary pursuits, his *Speranze d'Italia* (Italy's Hopes) making him an international reputation. This work greatly hampered the Republican party under Mazzini.

Balbo, Italo (1896-1940), It. marshal and airman, b. in Quartesana, Ferrara. As a youth he did some newspaper work before entering the army in the First World War, serving in an Alpine regiment. By 1920 he had become a Fascist and was organising 'flying squadrons,' which made attacks on Communists and Socialists. In these affairs he once raised 3000 men for the capture of Ravenna from the Communists and twice besieged Parma in 1922. Mussolini put him in charge of the Blackshirt Militia, and in the 'March on Rome,' Oct. 1922, B. was one of the quadrumvirs who led the Fascists. In the Fascist regime he became under-secretary of national economy; but his chief work was the regeneration of the It. air force, which he lifted out of mediocrity to the point of challenging comparison with any other in Europe. Led many spectacular flights, including 1000-m. non-stop flight in 1928 with 9 machines from Rome to Hornchurch, Essex; a flight in 1930 with 12 machines across the Atlantic to S. America; a flight round the W. Mediterranean with 61 machines; a flight of 36 bombers to Odessa; and, in 1933, with 26 machines he flew from Italy to Chicago, 2 machines being lost. In 1929 he was appointed air minister, a post which Mussolini had been occupying himself. Promoted to marshal 1933. In Nov. of that year Mussolini took over the Air Ministry and made B. governor-general of Libya, the general assumption being that Mussolini was jealous of his popularity and wanted to exile him. In Libya B. built farm-houses for the colonists and fortifications to offset the Fr. fortified line in Tunis. He was killed at Tobruk (which he had converted into a strong air and naval base) in June 1940, together with 9 other occupants of a plane which crashed there. The Brit. Foreign Office denied

the It. announcement that he had fallen in action against the R.A.F., and it was freely said that his machine had been deliberately shot down by the Its. themselves. Picturesque, dynamic, full of ambition, and with courage bordering on recklessness, he was always to the fore. Friendly to Britain, it is probable that he was against Mussolini's declaration of war against that country, and striking tributes to his memory were paid by the R.A.F. at Tobruk in the shape of wreaths dropped by planes.

Balboa, the monetary unit of the republic of Panama. It is of the same size and fineness as the U.S.A. silver dollar, but is maintained equivalent to the gold dollar.

Balboa Heights, the headquarters of the administrative organisation known as the Panama Canal.

Balboa, Vasco Nuñez de (1475-1517), Portuguese discoverer and adventurer who settled a colony at Santa Maria in the gulf of Darien in 1513. He subsequently marched across the isthmus of Darien and discovered the Pacific Ocean. He was superseded in his command, but at length was appointed lieutenant-governor of the countries on the Pacific coast, and married the daughter of Pedrarias Dávila, his successor at Darien. But he was accused of disloyalty, and put to death by Pedrarias.

Balbriggan, seaport in co. Dublin, Eire, 22 m. N.E. of the cap. It became known for its hosiery and woollen manufactured articles, and there is a linen trade; pop. 2300.

Balbus, Lucius Cornelius, Rom. soldier, native of Gades (Cadiz), in Spain. He served under Pompeius in the war against Sertorius, for which he received Rom. citizenship. He was prosecuted on a charge of illegal assumption of the citizenship, and was defended by Cicero and acquitted. He looked after Caesar's property during the Gallic campaigns. In 40 B.C. under Octavius (afterwards the Emperor Augustus) he was made a consul.

Balcarras, see CRAWFORD AND BALCARRES, EARLS OF.

Balchen, Sir John (1670-1744), Brit. naval officer. He first served in the W. Indies, then in the N. Sea, 1703-5, and on the coast of Guinea, 1705. He was twice captured by the Fr.—when he was in command of the *Chester*, 1707, and when in command of the *Gloucester*, 1709. He again served in the W. Indies, 1715-16, and in the Baltic, 1719-27. In 1728 he was appointed rear-admiral, in 1734 vice-admiral, in 1743 admiral, and 1744 governor of Greenwich Hospital. He was lost with his ship off Alderney, Oct. 1744.

Balche, Bulgaria, see BALTJIK.

Balcony, railed gallery in front of a window. That it was not always placed before a casement is proved by its origin, as it was built out from the sides of fortified places to enable the defenders to throw stones and boiling liquid on the besiegers. Its introduction in dwelling houses dates from the early part of the fifteenth century. It, in origin, it soon became popular in Spain and the Mediterranean countries.

Baldachin: 1. Canopy which is erected over an eccles. altar. It is an ornate structure, generally made of marble or silver. In ant. times it was known as the ciborium, from the circumstance that the consecrated bread was kept beneath it. 2. In its domestic sense the term is employed to distinguish any prominence over doorways, windows, or even canopied beds. The term has also been used to describe the canopy held over an E. potentate to shield him from the sun.

Baldassaro de Belgoloso, see BALTA-SARINI.

Bald Buzzard, see OSPREY.

Balder, Norse god of light, son of Odin and Frigg, and husband of Nanna. He may be described as the Scandinavian Apollo. The gods were aware that if evil happened to him it would be the signal for their overthrow, and therefore Frigg laid every object, quick and dead, under an obligation to refrain from offering him hurt. Loki, the god of evil, however, discovered that this oath had not been administered to the mistletoe plant, which was considered to be too young and weak to hurt any one, and, profiting from the omission, he threw a sprig of it at B., who fell down dead. Hel, goddess of the dead, offered to restore him to animation provided all things wept for him. But Loki refused to do so, and B. was lost. The B. myth is considered by some authorities to be a remnant of tree-worship, by others a myth of ritual origin, but it is probably a sun-myth, the slaughter of the luminary by the malevolent powers of winter. Again the mistletoe alluded to may not have been intended to describe the plant, but a magic sword, *Mistelleinn*, the origin of the name of which is totally different from that of the plant, which is unknown in Iceland, whence the oldest known form of the myth comes. *See F. Kauffmann, Balder: Mythos und Sage, Strasburg, 1902.*

Baldi, Bernardino, It. author, b. at Urbino in 1553, of a noble family. He wrote a number of works in prose and verse, the greater part of which have remained unedited. Among those pub. are a poem on navigation, and sev. eclogues. Of his prose works there are sev. Dialogues. He also compiled a short chronicle of all the mathematicians known from Euphorbus down to his own time; and he pub. 2 Lat. works on Vitruvius.

Baldi, Lazzaro (1623 or 1624-1703), It. painter and engraver. He studied under Cortona at Rome, and became a clever imitator of that master. His works include: at Rome, 'Annunciation' in the church of St. Marcel; 'The Virgin, St. Catherine, and St. Bridget,' in the church of Santa Maria della Pace; and at Florence, 'St. John, the Evangelist,' in the basilica of St. John Lateran.

Baldinuoli, Filippo (c. 1624-c. 1696), It. author. He pub. a work on the hist. of the painters from Cimabue (1260) to 1670 (1681-88, 1767-74); and a hist. of the most celebrated engravers and their work (1686).

Baldivia, see VALDIVIA.

Baldmoney, see MEUM.

Baldness, absence of hair upon the scalp, which may be a sign of old age or may be congenital. Senile B. (*calvities* or *calvitium*) is much more common in men than in women. Until the prime of life is passed, new hairs grow to replace the dead ones that fall out daily; it is not till failure in the nutrition of the scalp occurs that B. begins. Congenital B. (*hypotrichosis congenita*) usually gives place in time and with treatment to a natural growth of hair, but may last through life. B. that is not senile or congenital is generally due to ill health, though it may be hereditary. Pre-senile B. or premature alopecia in men may be due to wearing tight leather bands inside the hat or closely fitting waterproof and cloth caps. It may also be due to seborrhoeic eczema, the characteristic of which is extreme scurfiness of the scalp. Nervous complaints, anaemia, child-bearing, and favus are all said to be causes of B. *Alopecia areata* (B. in patches) often attacks young persons, and is liable to be mistaken for ringworm. Any stimulating treatment, such as massage, and the use of electricity, promotes growth of the hair. Salt water, precipitated sulphur, and ointment of mercury are applied to check B., but attention to the general health and occasional use of iron tonics are helpful.

Baldock, tn. in Hertfordshire, with a fourteenth-century church. Hosiery manuf., malting, and brewing are the staple trades. Pop. 5,600.

Baldovinetti, Alessio (1427-99), It. painter, b. at Florence. Most of our knowledge of him depends on Vasari, who states that he was the son of a rich merchant, but soon abandoned his father's calling for art and probably studied under Uccelli. From what is known of him, it is evident that B. was one of the most eminent of the early masters of the Florentine renaissance, though his extant work shows a want of harmony in colouring, while his figures, generally drawn from common life, are somewhat unpleasant. But in the representation of details, whether in woods, buildings, trees, etc., he had real merits and he was famous for his extensive views of landscape backgrounds. Of his pictures the best known are an 'Enthroned Virgin and Child' with six saints, now in Florence; his own portrait in the Bergamo gallery; 'The Nativity'—a large fresco in the cloisters of the Santa Annunziata (1460)—and some panels representing the Holy Trinity for the altar of the church of Santa Trinita and now in the Florentine Academy. He d. at Florence.

Baldrey, Joshua Kirby (1754-1828), Eng. engraver and draughtsman. His works consisted of portraits after Reynolds, which were exhibited in the Academy in 1793 and 1794; religious subjects as 'The Finding of Moses' (1785), after Salvator Rosa; classical subjects as 'Diana,' after Carlo Maratti; his *chef-d'œuvre* is the E. window of King's College Chapel, Cambridge. In 1818 he pub. a work on the windows of that chapel.

Baldric (O.F. *baudret*, a belt). broad

belt, often of ornate design, worn in the Middle Ages across the body from shoulder to waist diagonally, used for supporting a quiver, bugle, or even a sword.

Balducci, Francesco (1600-42), It. poet, b. at Palermo. His *Rime* estab. his reputation as an anacreontic poet, and he also wrote *Canzoni siciliane*.

Baldung, Hans (c. 1470-1545), called also Hans Grün, Ger. painter and wood-engraver, the contemporary and friend of Albrecht Dürer. He was b. at Gmünd, in Swabia, but lived chiefly in Switzerland, at Strasburg, and its neighbourhood. His woodcuts are variously signed H. B., H. B. G., and H. G. As a painter he was little inferior to Albrecht Dürer in expression, colouring, or finish.

Baldwin, name of sev. cities, townships, and post-vils. of N. America. It is also the name of a co. of Alabama, which is bounded on the S. by the gulf of Mexico and has Daphne for its cap. Pop. 20,730.

Baldwin (d. 1190), archbishop of Canterbury during the reigns of Henry II. and Richard I. Having entered holy orders, he was made archdeacon of Exeter, but the secular duties of that office were distasteful to him, and he became a monk in the Cistercian abbey of Ford, Devonshire, of which he was elected abbot within a year. In 1180 he was promoted to the bishopric of Worcester. In 1184 Henry II. removed him to the see of Canterbury, in spite of the opposition of the monks. In 1186 B. seized certain offerings paid to the convent in order to build a church and monastery for secular priests at Ilkington; but the monks appealed to Rome, and he was obliged to desist. In 1189 he crowned Richard, king at Westminster and attended the king's council when his natural brother Geoffrey was promoted from the see of Lincoln to that of York. B. successfully asserted the pre-eminence of the see of Canterbury, forbidding the bishops of England to receive consecration from any other than the archbishop of Canterbury. Having made a visitation in Wales, preaching the crusade, B. took the cross and followed Richard to the Holy Land in the company of Hubert, bishop of Salisbury, and Ranulf Glanville (1190). He d. at Acre in the same year. B. wrote *De Sacramento Altaris* and other treatises of the same nature. His works are contained in the *Bibliotheca Patrum Cisterciensium*, 1662. Consult W. F. Hook's *Lives of Archbishops of Canterbury*, vol. II.

Baldwin (d. 1098), an abbot and physician. He became monk of St. Denys; prior of Liberau, Alsace; abbot of St. Edmund's; and physician to Edward the Confessor and to William the Conqueror.

Baldwin, the name given to the counts of the house of Flanders. The countship was founded by B. I., Bras de fer (Iron Arm). He married Judith, the daughter of Charles the Bald, without her father's knowledge, which brought about war between Flanders and Aquitaine. He d. in 879 at Arras.

Baldwin II., his son, married Alfrith, the daughter of King Alfred of England. He d. in 919.

Baldwin III., 'of the handsome beard' (d. 1034), enlarged his ters. by seizing Valenciennes, the is. of Walcheren, and other parts of Zealand.

Baldwin IV., 'le Debonnaire,' was guardian to Phillip, the young king of France, during his minority, 1060-67. B. married his daughter Matilda to William of Normandy, whom he accompanied to England on the Conquest. He d. in 1067 and was buried at Lille. Five other Bs. succeeded to the countship, the most important being B. IX., who became first Lat. emperor of Constantinople.

Baldwin I. (1171-1206), first Lat. emperor of Constantinople, b. at Valenciennes. He joined the fourth crusade in 1200 as count of Hainaut and Flanders, and took part in the capture of Constantinople on behalf of Alexius, son of Isaac II., emperor of Constantinople, against his uncle, the usurper, Alexius Angelus. Alexius was unable to keep his promises with regard to payment, and in consequence was murdered and Constantinople was sacked. B. was chosen emperor and crowned in 1204. The Gks., with the aid of the Bulgarians, massacred the Lat. in Thrace; B. laid siege to Adrianople, but was defeated and taken prisoner by John, king of Bulgaria, 1205, and d. in captivity, 1206.

Baldwin II. (1217-73), the son of Peter II. (de Courtenay) and nephew of B. I., succeeded as emperor of Constantinople in 1228, but was not crowned till 1239, John of Brienne, his father-in-law, acting as regent during his minority. In 1261 he was driven out of his cap. by Michael Paleologus, ruler of Nicæa, and took refuge in Italy.

Baldwin I. (1058-1118), king of Jerusalem, son of Eustace, count of Bouillon, and of Ida of Lorraine. He accompanied his two elder brothers, Godfrey and Eustace, to the first crusade in 1096, and took Tarsus in Cilicia. He there quarrelled with Tancred, the Norman, about precedence, and retired to Edessa, where he was proclaimed lord and assumed the title of count of Edessa. On the death of Godfrey, 1100, he was called to succeed him in Jerusalem. He became protector of the Holy Sepulchre, and assumed the regal title, which his brother had refused, and was crowned on Christmas Day, 1100. He carried on continual warfare against the Turks; he conquered Cesarea, Ashdod, and Jaffa, 1101, Tripoli, 1103, Acre, 1103, Sidon, 1111, and Ascalon finally surrendered in 1112. See Tasso's *Jerusalem* (canto I.) for brief portraits of B. and his brother Godfrey. Fulcher, B.'s chaplain, is the chief authority for the events of his life in *Historia Hierosolymitana*.

Baldwin II., du Bourg, count of Edessa, succeeded his cousin B. I. as king of Jerusalem, where he reigned from 1118 to 1131. During his reign Tyre was taken, and the military and religious order of the Templars was instituted for the defence of the Holy Land. He renounced the throne in favour of his son-in-law, Foulques of

Anjou, in 1131, and retired to the monastery of the Holy Sepulchre.

Baldwin III. (1129-62), succeeded his father, Foulques of Anjou, king of Jerusalem, in 1143. Under his reign the Christians lost Edessa, which was taken by storm in 1145 by Zenghi, Turkish prince of Aleppo and father of the famous Nur-eddin, or Nureddin. B. had to struggle during the greater part of his reign with the power and abilities of Nur-eddin. Louis VII. of France and Conrad III., emperor of Germany, joined B.'s forces in an attempt upon Damascus, in which they failed. After his death the Christian kings soon began to lose their power in the E. He was succeeded by his brother Amalric or Amaury, who *d.* in 1173.

Baldwin IV., the Loper, son of Amalric, reigned as king of Jerusalem from 1173 to 1184, when he signed in favour of B. V., son of his sister Sibylla, and a child of six years old. He *d.* a few months after his uncle in 1186.

Baldwin, Evelyn Briggs (1862-1933), Amer. Arctic explorer, *b.* at Springfield, Missouri. He accompanied Peary on the N. Greenland expedition as meteorologist, 1893-94, and acted in a similar capacity as second in command of Walter Wellman's polar expedition to Franz Josef Land, 1903-9. He discovered and explored Graham Bell Land, 1899, and organised the B.-Ziegler polar expedition, 1901-2. He built and named Fort McKinley. He pub. sev. meteorological reports, and wrote *Search for the North Pole, Franz Josef Land, and North Greenland Expedition*.

Baldwin, James Mark (1861-1934), Amer. psychologist, *b.* at Columbia, S. Carolina. In 1897 he was awarded the gold medal of the Royal Academy of Science of Denmark. He was Herbert Spencer lecturer at Oxford, 1915-16, and Harvard lecturer to Fr. provincial univ., 1915. Lecturer at École des Hautes Études Sociales in 1918, he was its prof., 1919. His publications include *Handbook of Psychology*, 2 vols., 1888; *Social and Ethical Interpretations*, 4th ed., 1907; *Mental Development of the Child and the Race*, 3rd ed., 1907; *Darwin and the Humanities*, 1909; *The Individual and Society*, 1910; *History of Psychology*, 1913; *Genetic Theory of Reality*, 1915.

Baldwin of Bewdley, Stanley, first Earl (1867-1947), Eng. statesman, created earl in 1937; Prime Minister and First Lord of the Treasury, 1923-24, 1924-29, and 1935-1937; Lord Privy Seal, 1932-34; Lord President of the Council, 1931-35. He was *b.* at Bewdley, Worcestershire, Aug. 3, 1867, being son of Alfred B. (1841-1908), and having had for great-grandfather James Macdonald, Irish Wesleyan minister—another of whose great-grandsons was Rudyard Kipling. There was also an early Quaker element in his ancestry. At Stourport, the Bs. had an iron-founding business dating from the beginning of the nineteenth century, and B.'s father sat in Parliament for West Worcestershire from 1892 till his death. B. was educated at Harrow, where he was fairly industrious; at Trinity College,

Cambridge, in his own words, he learnt nothing. At one period he had thoughts of becoming an Anglican clergyman; but he joined his father as partner when he came of age, and for 20 years devoted himself to the business. On his father's death, B., who had in 1906 unsuccessfully contested Kidderminster, succeeded to the seat in Parliament—now called the Bewdley div.—which he kept until he received a peerage. 'For eight years,' said *The Times*, 'he was an unobtrusive back-bencher—everybody liked him; but when he entered



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his fiftieth year in the middle of the war, no speculation would have seemed more wildly improbable than his elevation to the premiership within six years.' When the second Coalition Gov. was formed under Lloyd George, Bonar Law became chancellor of the exchequer, and B. was appointed his parl. private secretary in Jan. 1917. A few months later he was financial secretary to the Treasury; he was the only person on the Treasury bench of that time with a voice and delivery that pleased the press gallery. For a time he shared his office with Sir Hardman Lever. From Apr. 2, 1921, he was president of the Board of Trade. As the time for a general election approached in 1922, B. became dissatisfied with the Coalition, and even thought of retiring from public life. The majority of the Conservative ministers wished the Coalition to continue; and, at a party meeting at the Carlton Club in that year, Mr. (later Sir) Austen Chamberlain, the lord privy seal, spoke in that sense. The

leading speech in opposition was B.'s: it swayed the meeting; the Coalition was condemned; the election gave the Conservatives a clear majority; and the Bonar Law Gov., already formed, met Parliament with B. as chancellor of the exchequer. His most prominent action while in this office was his visit to Washington in Jan. 1923 with Mr. (later Lord) Norman—the governor of the Bank of England—to settle the funding of the debt of £978,000,000 to the U.S.A. The chief difficulty here was the rate of interest, and B. and Mr. Norman left without settling it. B., however, agreed to recommend terms which would extinguish the debt in 62 years at the rate of 3 per cent for the first 10 years and 3½ per cent thereafter. In parliament he upheld the Amer. proposals, which were accepted.

In May 1923 Bonar Law retired through ill health, and B.—who, six months before, was hardly known to the greater part of the public—became Prime Minister at the age of 56. During the early years of his first premiership B. attained to an almost unprecedented position of authority as the leader and spokesman of the nation. He visited Paris in Sept., and saw the Fr. President and Prime Minister—there being severe tension on account of the occupation of the Ruhr. In Oct., at the Imperial Conference, and also at the Conservative party's conference at Plymouth in 1923, B.'s utterances marked the renewal of that party's move towards Protection. The Gov. having been weakened by the Bonar Law policy of 'tranquillity,' a general election was held in Dec., and the Conservatives lost their clear majority. B. paid no more attention than did Asquith to the *Daily Mail's* adjurations to form an 'anti-Socialist' bloc; he was defeated in the Commons Jan. 21, 1924, and resigned next day. The Labour Gov. that followed fell on Oct. 8, over the Campbell prosecution question: B.'s management secured their defeat. Then followed the 'Zinoviev' election: the Conservatives came back with a large majority, and Winston Churchill, crossing the floor once more, became B.'s chancellor of the exchequer. B. immediately declared that 'safeguarding' would not be used as a wedge to introduce Protection in this parliament. Difficulties in the coal trade in July 1925 were postponed for nine months by B.'s agreeing to subsidise the industry with not less than £10,000,000. At the end of that period, the subsidy (£23,000,000) being exhausted, matters stood exactly as they had been at its beginning, and the general strike (q.v.) of May 1926 took place—the foremost figure in Gov. action being, not the Prime Minister, but Mr. Churchill. As regards the coal-mines, B. immediately brought in a Bill to suspend the Seven Hours Day Act. He also pledged the Gov. to deal with the problem of the House of Lords in that parliament; but his Gov. never did—its one proposal (which would have made the Upper Chamber independent even of the royal prerogative) being dropped almost

as soon as announced (June 1927). The same year, B. paid a visit to Canada—addressing audiences at Montreal, Ottawa, Toronto, Fort Erie, Calgary, Regina, Winnipeg, and St. John (New Brunswick). A wide extension of women's franchise, strongly opposed by Conservative newspapers, was passed in 1928. In 1929 there was passed an Act abolishing poor law guardians, and relieving agric. land entirely, and land occupied for industrial purposes partially, from rates. In this year also B. went to the country on an extension-of-safeguarding programme; and at the general election of May 30 his party sustained a heavy defeat, and he resigned—the Labour party taking office again, though without a clear majority. He was elected rector of St. Andrews Univ., May 1930. In 1931 he took office as lord president of the Council in the National Gov. formed by Ramsay MacDonald. In July 1932 he headed the Brit. Gov.'s delegation to the Imperial Economic Conference in Ottawa (see OTTAWA ECONOMIC CONFERENCE). On MacDonald's resignation in 1935, B. took his place as Prime Minister. In his Indian policy he was taunted by Mr. Churchill with splitting the Tory party, but he pursued his course and secured sufficient support for a Bill framed on the general lines of the Joint Committee's Report (see INDIA, History). The Bill (Government of India Bill, 1935) received the Royal Assent on Aug. 22, 1935, and B. had again triumphed, for the Tory party had escaped a split and the National Gov. was prepared to make a united appeal for a new vote of confidence. But B.'s personal triumph was short-lived, for within a month thereafter the Hoare-Laval Pact (q.v.) for settling the Abyssinian war by the cession of Ethiopian ter. to Italy was concluded in Paris, and the swift reaction of Brit. public opinion inflicted upon B. the greatest humiliation of his career, the pact being regarded as a betrayal of the League of Nations. B. felt that he was not at the time free to expose the relatively defenceless position of the country, a position which might well have been put to the test had Britain tried to implement a 'sanctions' war against Mussolini. Some thought that B. should have resigned in company with his foreign secretary (Hoare), but such a step, within a month of a general election, would have raised grave issues at home and abroad. Popular support of the League and 'collective security,' however, had its effect at the general election, which was fought chiefly on the issue of Brit. foreign policy in the Italo-Abyssinian conflict, as well as on rearmament, and B. was returned with a majority of nearly 250. It was about the middle of 1935, in this atmosphere of the use of 'economic sanctions,' that B. began gradually to emphasise the increasing menace of air attack and to prepare the nation for a policy of rearmament. But it is doubtless evident that he did not realise how little time there was in a world ruled by force and destined to be disrupted by the aggression of totalitarian states. A more daring leader would have

challenged the powerful pacific elements in the country and so widened the margin between survival and disaster which, when war did come, was to prove so perilously narrow. It fell to him, in the midst of preoccupations with grave international problems, to advise King Edward VIII. on the constitutional position arising out of his proposed marriage. In the event King Edward abdicated (Dec. 1936). B.'s Cabinet took the precaution of drafting a Bill cited as 'His Majesty's Declaration of Abdication Bill,' and it was B. who laid the measure before Parliament. Towards the Sp. Civil war B. pursued a policy of non-intervention, which, however, resulted in handicapping the Sp. republicans and enabling Gen. Franco's insurgents to reap the full benefit of the substantial aid in forces and munitions from Germany and Italy. B. retired from an active part in politics in 1937, being granted an earldom in the same year. D. at his home near Stourport-on-Severn, Dec. 14, 1947. It has been justly said of B. that no man can be Prime Minister of England 3 times without possessing great qualities. Perhaps his chief title to enduring fame is that he could impose his character upon the mind of Parliament and the nation for as long as 15 years. He had sweetness of temper and magnanimity, but was prone to inertia and only too conscious of his indolence. Britain's unpreparedness for war was blamed on him alone; posterity will be more just, but it is certain that a man who was thrice Prime Minister between the Fr. occupation of the Ruhr (q.v.) and the visit of Neville Chamberlain to Munich (see MUNICH PACT) will have to bear a large share.

Publications: *Classics and the Plain Man and On England and Other Addresses*, 1926; *Our Inheritance* (speeches), 1928; *The Torch of Freedom* (speeches), 1935; *Service of our Lives*, 1937; *Interpreter of England*, 1939. See Wickham Steed, *The Real Stanley Baldwin*, 1930.

Baldwin, William (fl. 1547), wrote poetical and other works, and also acted as a clergyman and schoolmaster. He managed theatrical performances for the courts of Edward VI. and Mary, and ed. *Mirror for Magistrates*, 1559.

Bale, package or certain quantity of goods or merchandise, packed up in cloth and tightly corded or hooped and marked and numbered so as to correspond with the marks and numbers in bills of lading for identification purposes. Specifically, a bale of cotton, weighing 500 lb. (Amer. cotton) or 700 lb. (Egyptian cotton), and other fixed weights for various other commodities.

Bale, see BASEL.

Bale, John (1495-1563), Irish prelate, b. at Cove in Suffolk, and entered Jesus College, Cambridge, 1514. In 1529 he became prior of the Carmelites of Ipswich. Soon after this date he adopted the principles of Protestantism, and wrote in its defence. In consequence Edward VI. made him bishop of Ossory, 1552, but on the accession of Mary he was forced to escape, first to Holland and then to

Switzerland. On his return to England he was made a prebendary of Canterbury by Queen Elizabeth. He d. at Canterbury, and was buried in the cathedral. His fame rests on his contributions to early Eng. drama, notably *Kinge Johan*, which is a link between the morality plays and Elizabethan historical drama. He also wrote the first literary hist. of England in Lat., 1548, and one or two autobiographical pieces. His select works were pub. by the Parker Society, 1849.

Baleario Isles, group of is. lying off the E. coast of Spain in the Mediterranean, the prin. of which are Majorca, Minorca, Iviza, Cabrera, and Formentera. They comprise a prov. of Spain, and have an area of 1860 sq. m. with a pop. of about 377,000. The cap. is Palma, around which the olive is successfully cultivated, its growth forming one of the staple industries of the is. About an equal number of the inhab. are engaged in the anchovy and sardine fisheries. In the second century B.C. the is. were annexed by Rome, whose armies they joined in large numbers as slingers, in which method of warfare they were especially skilful. In the first quarter of the fifth century the group was overrun by the Vandals, and subsequently passed under Arab dominion in the eighth century. It became a prov. of Aragon in 1343. In the Sp. Civil war, 1936-39, It. naval forces co-operated here with Franco's forces against the Republicans. See F. Chamberlin, *The Balearics and their Peoples*, 1927.

Balechou, Jean Jacques (1715-64), Fr. engraver. His works are still valued and sought for by collectors.

Balen, Hendrik van (1560-1632), Flemish historical painter, and the first master of Van Dyck and Snyders, b. at Antwerp. He studied under Adam van Oort, and later at Rome.

Balestra, Antonio, It. painter, b. at Verona in 1666. He was brought up as a merchant, but before his twenty-first year he was studying painting under Bellucci at Venice. He afterwards studied under Maratta at Rome, and he eventually painted much more in the style of the Rom. than of the Venetian; he, however, combined the chief beauties of Venetian colour with the characteristic correctness and solidity of design of the Rom. school, and is regarded as one of the most able painters of his time. He d. in 1734 or 1740.

Balfe, Michael William (1808-70), Irish singer and composer, b. in Dublin, and early showed great talent, acting as conductor of the Drury Lane orchestra in 1824, when only 16. After an It. training he settled down to the task of composing operas. His first Eng. opera, *The Siege of Rochelle* (1835), ran for 8 months, but it was his *Bohemian Girl*, produced in 1843, that brought him prominently before the public. In 1845 he was appointed conductor of the It. Opera, Covent Garden, and in 1857 produced *The Rose of Castile*. Later he staged *Satanella*, *Blanche de Nevers*, *The Puritan's*

Daughter, and *The Sleeping Queen*, none of which, however, repeated the success of his *Bohemian Girl*. He may be classed as of the school of Rossini and Auber.

Balfour, Alexander Hugh Bruce, Lord Balfour of Burleigh (1849-1921), Scottish nobleman, of the family name of Bruce, was educated at Loretto, Eton, and Oriel College, Oxford. He was created sixth Baron B. of Burleigh in 1869. The title had originally been bestowed upon his ancestor, Sir James B., in 1607, but the fifth baron having been implicated in the Jacobite rising of 1715, the title was attained. He married Lady Katherine Hamilton-Gordon, sister of the seventh earl of Aberdeen. He was a Conservative, and was secretary for Scotland, with a seat in the Cabinet, from 1895 to 1903. He always took an active and useful part in political, educational, and social reform movements. Some of his addresses have been pub., such as *Education of Neglected and Destitute Children*, *Higher Education in Scotland*. He also wrote *The Rise and Development of Presbyterianism in Scotland*, 1911.

Balfour, Arthur James, first Earl (1848-1930), Eng. statesman and philosopher. P.C., F.R.S., D.L. of Lothian, M.P. for the City of London 1906-22. He was b. on July 25, 1848, being the eldest son of James Maitland B. of Whittingham and the Lady Blanche Gascoigne Cecil, the second daughter of the second marquess of Salisbury. He was thus descended from one of the most anct. families of Scotland and allied also to one of the greatest political families in England. He was educated at Eton and proceeded from there to Cambridge, where he entered Trinity College and took his master's degree. In 1874 he commenced his long political career by being returned as the member for Hertford in the Conservative interest; this constituency he continued to represent until 1885, when he was returned for E. Manchester. In 1878 he became private secretary to his uncle, the marquess of Salisbury, who, on the resignation of Lord Derby, had become foreign secretary. In his capacity as private secretary B. accompanied Lords Beaconsfield and Salisbury to the Berlin congress, where he received his first lesson in international politics in the settlement of the affairs of Russia and Turkey. About the same time, however, he pub. his famous philosophic treatise, *A Defence of a Philosophy Doubt* (1879). This raised his literary reputation and left no doubt but that if he cared to devote himself to literature he would soon establish a considerable reputation. During the years which followed he devoted himself equally to politics and study. In 1880, on the accession to power of the Liberal Gov., he was released from his secretarial duties and became a member of the Fourth party. The other members of this party were Lord Randolph Churchill, Sir Henry Drummond Wolff, and Sir John Gorst. During the first half of this decade he was regarded as the scion of a noble house who played with politics because it was the tradition of his house to do so, and

many considered that his health was too uncertain to admit of his taking an active part in politics. On the occasions on which he spoke his speeches were noted not for their oratory or eloquence, but for their academic qualities. With the beginning of Lord Salisbury's first administration B.'s active official career began. In 1885 he became president of the Local Gov. Board, but this office he did not hold long, as the first Salisbury administration came to an end at the beginning of 1886.



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The second Salisbury administration, formed in the July of 1886, saw B.'s appointment to the chief secretaryship of Scotland and a seat in the Cabinet. In the early part of 1887 one of those accidents of politics raised him to a position in which he astonished his critics and gained for himself a great and lasting reputation as a man of character and a firm statesman. In that year Sir Michael Hicks-Beach (later Viscount St. Aldwyn) resigned the chief secretaryship of Ireland owing to an affection of the eyes. The political world was astonished by the appointment of B. to the vacant position and the opposition jeered at the appointment of a man whom they regarded as a *flâneur*. This was B.'s first great appointment, and by the work which he did there, by the firmness with which he suppressed crime, by the tenacity with which he clung to his policy, he made himself the most prominent of Conservative statesmen, the most loved and respected by his adherents, the most hated but at the same time the most respected by his opponents, the

Nationalists. The days of 'Bloody Balfour' have not yet been forgotten nor forgiven.

The criticism which had been levelled against him was quickly silenced on the debates which followed the Crimes Bill and the Irish Land Bill. His work covers one of the most exciting periods of Irish hist., and in the face of open outrage, in the face of threats and insults, B. proceeded with his work, which consisted of the pacification and good gov. of Ireland. How far he was successful is a question which is settled variously according to the bias of varying authorities; it remains to be said that he reduced crime enormously in Ireland, but the criticism that he turned Ireland into an armed camp cannot be altogether denied. That he was helped by events cannot be denied; the Parnell Commission, followed by the O'Shea divorce case, which led to the downfall of Parnell and the break up of the Irish party, must have aided him considerably. In 1891, on the death of H. W. Smith, he became first lord of the Treasury and leader of the House of Commons. During his first tenure of this post, he introduced a local gov. Bill for Ireland, which was withdrawn just before the dissolution of 1892, a dissolution which led to the downfall of the Unionist party and the accession to power of the Liberals. On the defeat of the Liberal party in 1895 he again became first lord of the Treasury and leader of the House of Commons in the administration of Lord Salisbury. During the three years in opposition, B. won for himself added fame by his conduct of the opposition. During the early days of this second period of leadership B.'s attitude on the education questions called forth criticism not only from the opposition, but from his own party as well, and this feeling was accentuated by his suggested scheme for a Rom. Catholic unit. for Ireland. His conduct of foreign affairs during the absence and illness of the Premier, Lord Salisbury, however, added very considerably to his reputation. His negotiations with Russia concerning N. China were brought to a successful close, and by means of a compromise he succeeded in establishing friendly relations with Russia in place of a threatened quarrel. With the remainder of the Conservative Cabinet he took responsibility for the negotiations with the Transvaal, but his conduct of the war, when war did break out, met with very considerable criticism.

In July 1902 Lord Salisbury resigned and B. succeeded him as Premier. The administration which followed will probably be remembered chiefly by the fiscal questions which came to the front during that period. The Conservative Cabinet, surprised by the sudden proposals of Joseph Chamberlain, divided itself into two camps. Many resignations took place, but B. retained his position as Premier, and declared himself in favour of a retaliatory tariff. By-election after by-election went against the ministry, and in Nov. 1905 the Gov. resigned, a gov. being formed by Sir Henry Campbell-

Bannerman. The election which followed brought about the complete downfall of the Unionist party. B. himself being defeated in E. Manchester, a seat he had held for 20 years. A safe seat was found for him in the City of London. Up to 1911 B. led the opposition in the House of Commons; On the question of the Veto Bill B. sided with Lord Lansdowne, and found himself opposed by a considerable and influential section of his party. After the Veto Bill had been passed, and just previous to the introduction of the Home Rule Bill, B. resigned his position as leader of the party. For some considerable time his position had been threatened by his own party, and his leadership was regarded as too pacific. In 1911 he resigned, saying that his health forbade his further continuance in so arduous a post; he, however, did not give up his seat, and after his resignation was of very great help to his party. His resignation was deplored by all parties. He was at this time, and even later, regarded as the future leader of the Conservative administration. But, until the outbreak of war in 1914, he lived in comparative retirement, although speaking strongly, both in and out of Parliament, against Home Rule for Ireland and disestablishment of the Church in Wales. He devoted some of his new-found leisure to giving addresses on literature and philosophic subjects. It was during this period that he again used his calming influence in the Marconi case, for the report of the committee on the case was embarrassing, but his intervention in the debate which ensued was decisive.

During this time he had retained his seat on the Committee of Imperial Defence, of which he was the chief author, and at the outbreak of war he placed his services at the country's disposal. On the formation, in 1915, of the first Coalition Cabinet, he became first lord of the Admiralty, and in this capacity he restored the harmony of the Board, which had been somewhat disturbed by Lord Fisher and Mr. Churchill. When Lloyd George succeeded Asquith as Prime Minister, B. accepted the foreign secretaryship, an office in which he had had some experience and had thus shared in the recent foreign policy. No sooner had he assumed this office than Germany instituted the unrestricted submarine campaign, which brought the U.S.A. into the war. The result of this was that B. left England for America, in Apr. 1917, as head of the Brit. mission which went to arrange co-operation with that country. His visit was a triumph, and he received the great compliment of being asked to address the House of Representatives. B. was also one of the four members of the War Cabinet.

In the business of making the peace after the war he was the second Brit. representative at the conference which assembled in Paris in Jan. 1919. Shortly after the peace of Versailles was signed he left the Foreign Office and became Lord President of the Council in 1919. About this time he was elected chancellor of the

univ. of Cambridge. He did not again hold Cabinet office. In February 1920 he presided at the first meeting of the council of the League of Nations and remained the Brit. representative of the League until he retired from office in Oct. 1922. In July 1921 he had accepted the invitation of President Harding for an international conference to be held at Washington, to deal with the limitations of armaments and to discuss Far E. and Pacific problems. Here he endorsed the bold proposals of Secretary Charles Hughes for the reduction of armaments and was largely responsible for the contribution made towards international peace. (See WASHINGTON, TREATIES OF (4)).

He visited Palestine in 1925 to open the univ. of Jerusalem. He had been associated with the gov. policy on Palestine enunciated in 1917 (see BALFOUR DECLARATION). He was much impressed by the advance the country had made, and convinced that the Arabs had benefited by the establishment of Palestine as a Jewish colony. On his return he became Lord President of the Council in Mr. Baldwin's second ministry, and took charge of the Civil Research Committee. B. attained no less a rank as a philosopher than as a statesman. In 1904 he had become president of the Brit. Association at Cambridge. He was raised to the peerage in 1922. Amongst his varied publications are: *A Defence of a Philosophic Doubt*, 1879; *Essays and Addresses*, 1893; *The Foundations of Belief*, 1895; *Economic Notes on Insular Free Trade*, 1903; *Questionings on Criticism and Beauty*, 1909; *Theism and Humanism*, 1915; *Theism and Thought*, 1923. See E. T. Raymond, *Mr. Balfour: a Biography*, 1920; and B. E. C. Dugdale, *Arthur James Balfour, First Earl of Balfour* (2 vols.), 1936-40.

Balfour, Edward Green (1813-89), Brit. surgeon-general and author. He entered the medical dept. of the Indian Army 1834, and became a surgeon 1852. His chief work is the *Encyclopædia of India*, 1857.

Balfour, Francis Maitland (1851-82), Scottish biologist, younger brother of Earl B. Born at Edinburgh, educated at Harrow, and Trinity College, Cambridge, where in 1870, he was elected natural sciences scholar. Animal morphology next claimed his attention, and he succeeded in obtaining one of the two seats allocated to Cambridge at the zoological station at Naples. He had been impressed by the work of Sir Michael Foster in comparative embryology, and in 1880 pub. the first vol. of a treatise on that subject, following it with a second in 1881. The first of these vols. dealt with the embryology of the invertebrata, the second with that of the vertebrata. B. was resolute in refusing all offers of professorships from other univs., and continued to reside at Cambridge, which at length recognised his singlemindedness and ability by the institution of a special chair of animal morphology, of which he was appointed first prof. His health, never robust, was

undermined by typhoid fever. On his convalescence he visited Switzerland, and whilst there he essayed the ascent of the Aiguille Blanche, Mont Blanc, which at that time had not been attempted. In this effort he lost his life.

Balfour, George John Gordon Bruce, Baron Balfour of Burleigh (b. 1883), succeeded his father as seventeenth baron in 1921. During the First World War he served in France, being mentioned in dispatches four times and receiving the Legion of Honour. In 1922 he was elected a Scottish representative peer.

Balfour, Gerald William, second Earl (1853-1945), younger brother of first earl, to whose title he succeeded in 1930. Fourth son of J. M. B. He was educated at Eton and Trinity College, Cambridge. In 1885 he was returned to the House of Commons as member for Central Leeds. He was chief secretary for Ireland, 1895-1900; president of Board of Trade, 1900-5; president of Local Gov. Board, 1905-6. He was instrumental in introducing an Irish Local Gov. Bill which did much to conciliate the Home Rule party and which estab. co. councils and dist. councils, one half of the expenditure of those bodies being met from the imperial exchequer. On his defeat at Leeds in 1906 he retired from politics. In 1908 he was chairman of the Commission on Lighthouse Administration, and also chairman of the Cambridge committee of the Commission on Oxford and Cambridge Univs.

Balfour, Sir Isaac Bayley (1853-1922), Scottish botanist, b. in Edinburgh. He was regius prof. of botany at Glasgow, 1879-84; Sherardian prof. of botany at Oxford and fellow of Magdalen College, 1884-88. In 1888 he accepted a similar chair at the univ. of Edinburgh, and was regius keeper of the Royal Botanic Garden in that city from 1888 until his death in 1922. For the same period he was king's botanist in Scotland. In 1880 he explored the is. of Socotra, in the Indian Ocean, and in 1888 pub. the results of his travels in the *Transactions*, vol. xxxi., of the Royal Society, Edinburgh. Among his other publications are *Botany of Rodriguez*, 1878, and a translation of Goebel's *Organography of Plants*, 2 vols., 1900-5. He also ed. *The Annals of Botany* from 1887.

Balfour, Jabez Spencer (1849-1916), Brit. financier and politician, who became notorious as the chief promoter of the Liberator Building Society, 1868, and of similar speculative ventures, which failed in 1892 with liabilities amounting to over £8,000,000. B. fled to the Argentine, but was extradited to England and sentenced, in 1895, to 14 years' penal servitude. He was released in 1906. Between 1880 and 1893 he sat as Liberal M.P. for Tamworth and Burnley, and in his time was the first mayor of Croydon.

Balfour, James (1702-95), Scottish philosopher, of Pillrig in the shire of Midlothian, was admitted an advocate of the Scottish Bar in 1730. He early became an opponent of Hume, whose speculations he attacked in two anonymous treatises,

the one entitled *A Delineation of Morality*, the other, *Philosophical Dissertations*. In 1754 he resigned his judicial office, having been elected to the chair of moral philosophy at Edinburgh. This he resigned in May 1764 for the chair of public law, and afterwards he pub. his lectures under the title of *Philosophical Essays*. In 1779 he resigned the chair of public law, and retired to Pillrig, where he d.

Balfour, Sir James, of Denmyne and Kinnaid, Bart. (c. 1600-57), Scottish antiquary. He early displayed a capacity for poetry, and trans. Lat. verse into the Scottish vernacular. He studied heraldry at the College of Heralds in London, and later wrote the *Monasticon Scoticum*, a collection of Scottish eccles. charters. In 1630 he was created Lyon king-of-arms, and in 1633 was made a baronet. He was deprived by Cromwell of his office, but solaced himself with the collection of heraldic antiquities, and framed valuable abridgments of Scottish charters and chronicles, notably the *Annals of the History of Scotland*, etc., and *Memorials and Passages of State from 1641 to 1654*.

Balfour, Sir James, of Pittendreich (d. 1584), Scottish lawyer of the sixteenth century, studied for the Church. Implicated in the murder of Cardinal Beaton, in 1547 he was sent with other conspirators to the Fr. galleys, whence he escaped in 1550. Returning to Scotland, his lack of Protestant zeal drew upon him the wrath of Knox. Appointed rector of Flisk in Fiffe, he was created a lord of session or judge by Queen Mary in 1563. In 1567 he was appointed governor of Edinburgh Castle, and, having assisted the enemies of the queen, was after her dethronement made president of the court of session. He was forced to retire to France because of a charge brought against him of assisting in the murder of Darnley, but later returned. He compiled *Prædicts of Scots Law*, a handbook of the Scottish legal system.

Balfour, John Blair, see KINROSS OF GLASLUNKE, BARON.

Balfour, John Hutton (1808-84), Scottish botanist, was b. at Edinburgh and graduated at the univ. of his native city. Originally intended for the Church, he later abandoned this intention, and in 1831 took his M.D. degree. In 1841 he was appointed prof. of botany in the univ. of Glasgow, a seat he held until 1845, when he was called to fill a similar position at his Alma Mater. He was also appointed keeper of the Royal Botanic Gardens, where he had been preceded by Hope, Roxburgh, and Buchanan. This dept. of his work was so fostered by him that the botanical effort displayed in the outlay and scientific arrangement of these gardens brought him recognition from botanists all over the world. He was dean of the faculty of medicine in Edinburgh for 30 years, ultimately retiring from his various appointments in 1879. He d. at Edinburgh.

Balfour, Lord, of Burleigh, Scottish peer, d. 1688. The only remarkable circumstance concerning him is that he was mistaken by Sir Walter Scott for B. of

Burley, and as such introduced into the novel *Old Mortality*.

Balfour Declaration arose out of negotiations between the Zionists and the Brit. Gov. early in 1917, when the Brit. advance on Palestine was imminent and at a time when the Allies appreciated the value of winning the support of world Jewry for the allied cause. Similar negotiations ensued with the Fr. and It. Govs. The Zionists had previously put forward a definite scheme of Jewish nationalism, which received the official approval of the Allies, but the announcement of this approval was postponed till, at the end of Oct. 1917, the success of Allenby's invasion of Palestine seemed certain. On Nov. 2, 1917, the Brit. Gov. pub. a statement of policy, afterwards known as the Balfour Declaration, which took the form of a letter from Mr. (later Earl) Balfour, then foreign secretary, to Lord Rothschild: 'I have much pleasure in conveying to you on behalf of His Majesty's Gov. the following declaration of sympathy with Jewish Zionist aspirations, which has been submitted to, and approved by, the Cabinet: "His Majesty's Gov. view with favour the establishment in Palestine of a National Home for the Jewish people, and will use their best endeavours to facilitate the achievement of this object, it being clearly understood that nothing shall be done which may prejudice the civil and religious rights of existing non-Jewish communities in Palestine, or the rights and political status enjoyed by Jews in any other country." I should be grateful if you would bring this declaration to the knowledge of the Zionist Federation.' The text of this famous declaration, which in its practical realisation was destined to cause so much trouble subsequently in the Holy Land, was, prior to its publication, approved by President Wilson, and it was publicly endorsed by the Fr. and It. Govs. early in 1918. The declaration was not an expression of a wholly new sentiment. Brit. public opinion had long sympathised with the victims of anti-Semitic persecution; but the time and manner in which this sympathy, like that for the victims of the old Ottoman regime, was trans. into action were determined by the exigencies of the war. The moment was favourable for some such declaration; for Jewish sympathy with the allied cause would confirm the support of Amer. Jewry, and, besides, would make it more difficult for Germany to reduce her military commitments and improve her economic position on the E. front. To inform world Jewry of the declaration millions of leaflets were circulated throughout the Jewish communities; they were dropped from the air on Ger. and Austrian lns., and widely distributed through the Jewish belt from Poland to the Black Sea. The central powers retaliated with a counter-proposal for a kind of chartered company for Ger. Zionists coupled with a right of immigration into Palestine but, before these arrangements could be confirmed in Constantinople, Palestine was in Allenby's

hands. As regards the reaction of the B. D. on Arab opinion, it would seem clear that they expected, as the price of their support of the allied cause, the full independence of all Arab countries then in the Ottoman empire. Early in Nov. 1918 the Brit. and Fr. Govs. had issued a joint declaration encouraging the establishment of indigenous govs. in Syria and Mesopotamia, and, as the Arabs had always regarded Palestine as included in Syria, this announcement seemed to promise them all they wanted and their disappointment was therefore great when they learned that the allied powers proposed not only to separate Palestine from Syria but to place it under a special form of gov. in order to implement the policy of the B. D. For not long after the announcement of the B. D. Sir Henry McMahon, representing the Brit. Gov., had written dispatches to Sherif Hussein of Mecca giving his 'pledge' of support for Arab independence in consideration of Arab military aid in the war. This latter 'pledge' has always been interpreted by the Arabs to connote a promise of independence for all Arab lands, including Palestine, inasmuch as Palestine was always regarded by the Arabs as being part of Syria and was not specifically excluded from the countries mentioned by Sir Henry McMahon among those which were promised their independence; and, moreover, the so-called McMahon pledge was the only compact of which they knew. But during the peace negotiations in London and Paris the Emir Feisal, son of Hussein (who had then become king of the Hedjaz) was persuaded not merely to accept but even to welcome the policy of the B. D. This was not surprising because practically the whole of the Arab world was now free and independent as the result of the allied victory; and, furthermore, previously to coming to London Feisal had been convinced by Dr. Chaim Weizmann, the head of the Zionist organisation, of the benefits which the Jewish National Home would bring to Palestine as a whole. The emir, however, added a note of reservation to his agreement which he had then concluded with Dr. Weizmann, to the effect that 'if changes were made, he could not be answerable for the failure to carry out the agreement.' This agreement marks 'the one brief moment in the whole story at which a genuine harmony was estab. between Arab and Jewish statesmanship. If King Hussein and the Emir Feisal secured their big Arab state, they could concede little Palestine to the Jews' (Peel Report). It seems doubtful whether the Arabs of Palestine would ever have acquiesced, without revolting, in any appreciable development of the Jewish National Home in their country, but the last chance of any peaceful settlement on the lines of the Feisal-Weizmann agreement disappeared in 1920 when the Fr. Gov. made it clear that it was vehemently opposed to the establishment of an Arab state under the Emir Feisal's control at Damascus; and soon afterwards the emir was expelled from Syria and the

country was in Fr. occupation. In 1920 and again in 1921 violent Arab outbreaks against the Jews occurred in Palestine. The conflict between Arab and Jewish nationalism had begun and was to reach its climax in 1936-39, when murder and sabotage became the order of the day and a Brit. army of 30,000 men were in the country engaged in hunting down the Arab bands. There is an obvious conflict of two ideals implicit in the B. D., and there seems little doubt that the royal commission (under Lord Peel) in their report of July 1937, were justified in their assumption that the words 'the establishment in Palestine of a National Home' were the outcome of a compromise between those ministers who contemplated the ultimate establishment of a Jewish state and those who did not. But the Brit. Gov. evidently realised that a Jewish state might in course of time be set up, but it was not in a position to say that this would happen, still less to bring it about of its own motion. Yet many responsible statesmen, including Lord Robert Cecil, Mr. Winston Churchill, and Sir Herbert (later Lord) Samuel, all spoke or wrote in terms that could only mean that they contemplated the eventual establishment of a Jewish state in Palestine after the termination in the course of years of the Brit. mandatory regime. No precise definition of the meaning of the expression 'National Home' is given in the Mandate, or indeed anywhere else. From the text of the Mandate, however, it is clear that it could not mean merely expropriating Arab inhab. and transferring their land wholesale to the Jews as soon as, by immigration and organisation under a sympathetic administration, they should be in a position to fulfil the requirement of the Covenant of the League of Nations that there should be estab. a local independent gov. It is, on the other hand, equally certain that it cannot have meant merely encouraging Jews to settle in Palestine under the legislative and administrative dominance of a permanent Arab majority. This, however, is precisely what the Arabs sought, through a strong delegation in London in 1930, and what, in effect, they secured as the result of the Palestine conference held in London, Feb.-Mar. 1939. The Brit. Prime Minister (Mr. Ramsay MacDonald) made a statement in the House of Commons in 1930, which, while emphasising Brit. mandatory obligations, did not attempt to solve the problem. He said: 'A double undertaking is involved, to the Jewish people on the one hand, and to the non-Jewish pop. of Palestine on the other; and it is the firm resolve of His Majesty's Gov. to give effect, in equal measure, to both parts of the declaration, and to do equal justice to all sections of the pop. of Palestine.' But that Palestine was not to be converted into a Jewish state may be held to be implied in the phraseology of the White Paper of 1922 (Cmd. 1700), a statement which did not, however, remove doubts; hence, after the tragic events of 1936 to 1938, the Brit. Gov., having invited Arab and Jewish delegates

to a conference in London in 1939, declared unequivocally that it was not part of their policy that Palestine should become a Jewish state. This statement of policy (Cmd. 6019 of 1939) adhered to the interpretation, such as it is, of the National Home in the White Paper of 1922—'. . . the development of the existing Jewish community in order that it may become a centre in which the Jewish people as a whole may take, on grounds of religion and race, an interest and pride; but in order that this community should have the best prospect of free development . . . it is essential that it should know that it is in Palestine as of right and not on sufferance.' The Peel Commission thought that the association of the policy of the B. D. with the mandate system implied the belief that Arab hostility to the former would sooner or later be overcome, and the hope of Brit. Govs. ever since the B. D. was issued was that in time the Arabs, recognising the advantages to be derived from Jewish settlement and development, would become reconciled to the further growth of the Jewish National Home. But the Brit. Gov. realised, even before 1939, that that hope would never be fulfilled, and in the result adopted a policy which involved, *inter alia*, a definite limitation of Jewish immigration, the rejection of the scheme of partition proposed by the Peel Commission and the substitution of proposals for the gradual creation of a Palestinian state in treaty relationship with Britain. After the Second World War the Brit. and Amer. Govs. appointed a joint committee of 'inquiry regarding the problems of European Jewry and Palestine,' though it might well seem improbable that any new aspect of the problem could be found which might offer a hope of eventual solution. The committee reported, rather otiosely, that such information as they received about countries other than Palestine gave no hope of substantial assistance in finding homes for Jews driven out of Europe, and that Palestine alone could not meet the emigration needs of the Jewish victims of Nazi and Fascist persecution. They therefore recommended that their govts., in association with other countries, should try at once to find homes for all such 'displaced persons,' regardless of creed or nationality, whose ties with their former communities had been irreparably broken. The committee recommended that 100,000 certificates should be authorised immediately for the admission into Palestine of Jewish victims of Fascism, and that the certificates be awarded as far as possible in 1948, while actual immigration should be pushed forward as rapidly as conditions would permit. This was a startling proposal, and, of course, it at once excited Arab hostility. The committee, however, was not over-tolerant of Arab claims and incorporated in their recommendations a 'statement of principles' to the effect that neither race should dominate the other in Palestine, that Palestine should be neither a Jewish state nor an Arab state (contrary to the White Paper

of 1939), and that the form of gov. ultimately to be estab. should, under International guarantees, fully protect the interests in the Holy Land of Christendom and of the Moslem and Jewish faiths. 'Thus,' said the committee, 'Palestine must ultimately become a state which guards the rights and interests of Muslims, Jews, and Christians alike: and accords to the inhab., as a whole, the fullest measure of self-gov., consistent with the principles (now) set forth.' The committee recognised that any attempt to establish either an independent Palestinian state or independent Palestinian states would only result in civil strife such as might threaten the peace of the world, and therefore they thought that the mandatory regime should continue 'pending the execution of a trusteeship agreement under the United Nations.' Among other recommendations they advised the rescission of the land transfer regulations of 1940 in favour of new regulations based on a policy of freedom of sale and providing adequate protection for the interests of small owners and tenant cultivators. The Jews were hostile to the Brit. Gov.'s proposals of 1939 and Jewish terrorism, which had ceased at the beginning of the Second World War, broke out again in 1942 and continued thereafter. An Anglo-Amer. Committee of Inquiry, in a report of 1946, rejected partition and proposed a continuation of the mandate, pending the execution of a trusteeship under the United Nations. The various plans to put this proposal into operation were all rejected by the Jews and Arabs and the Brit. Gov. then decided to submit the whole problem to the United Nations. In May 1947 a special committee to investigate the problem and recommend a solution was then set up by the United Nations, and the majority of the members recommended the partition of Palestine into independent Arab and Jewish states. The Jews were willing to accept partition, subject to reservations. The Arabs rejected it completely. While this plan was still under discussion the Brit. Gov. announced its intention to withdraw all Brit. forces from Palestine by a certain date, and on Dec. 20, 1947, it was announced that the mandate would end on May 15, 1948. *See further under PALESTINE.*

Balfrush, or Barfrush, tn. in the prov. of Mazanderan, Persia, situated on the R. Bhawal, some 12 m. from the Caspian Sea. The riv. is not navigable, and it is necessary to land all merchandise and other goods at the port of Meshed-i-ser on the Caspian. A large trade grew up with Russia, and silk and rice are exported. The pop. is variously stated at from 10,000 to 50,000.

Balgonie, Lord, see LESLIE, ALEXANDER.
Balguy, John (1686-1748), Eng. theologian, was b. at Sheffield. He was educated at Cambridge, and in 1718 pub. 2 pamphlets in defence of Bishop Hoadley. In other works he defended Dr. Clarke and his views against such antagonists as Tindale and Shaftesbury. He wrote an *Essay on Redemption*, 1741, which

exhibited considerable broadmindedness for his time, and for his services, personal and otherwise, was appointed a prebendary of Salisbury in 1727 by Hoadley. He d. at Harrogate.

Balguy, Thomas (1716-85), Eng. divine, educated at Ripon Free School and St. John's College, Cambridge, where he held the Platt Fellowship, 1741-48, and was assistant tutor to Dr. Powell, lecturing on moral philosophy for 16 years. Among the various positions he held at different times were those of public orator, tutor to the duke of Northumberland, rector of North Stoke, prebendary of Winchester, archdeacon of Salisbury, archdeacon of Winchester, and vicar of Alton. He pub. many discourses, sermons, essays, and a life of his father, John B.

Bali, or **Bally**, tn. on the Hugli, W. Bengal, 4 m. N. of Howrah; pop. about 17,000.

Bali, **Bally**, or **Little Java**, is. of the Malay Archipelago, lying E. of Java, from which it is separated by the Bali Strait, and W. of Lombok. Area about 2100 sq. m. The pop. is over 1,000,000. There are volcanic mts., the highest being Gunung Agung, 10,400 ft. The country is split up into dists.: (1) Buleleng and Jembrana on Dutch ter.; (2) Badung, Mengwi, Tabanan, Bangli, and Klung Lung, which are autonomous states. The Dutch rule was estab. in 1849, and the residency of B. and Lombok is at Buleleng, in the N. The products of the soil are rice, cotton, tobacco, sugar, coffee, and indigo. Fine wood-carving and metal work is executed, and the women take a share in the trade and industries. The religion of the people of B. and the neighbouring is. Lombok is Brahminism, in a form even older than that now found in India. There is a written language called Balinese. B. was captured by the Jap. in 1942, and was formally liberated in 1946 when an allied force of 2600 Dutch troops, escorted by a Dutch destroyer, arrived on Mar. 3. No resistance was encountered from the Jap. garrison of 3400 who, indeed, co-operated in providing transport. B. remained unaffected by the nationalist movement of the Javanese, although these latter made efforts through emissaries to organise a similar movement against the Dutch in B., and gangs of disaffected people tried to terrorise the countryside. The Balinese people, however, evinced no sympathy for these manifestations, and the is. remained quiet.

Balihri, tn. in the Jabalpur dist. of the Central Provs. of India. In former times it was a city of much prosperity. It contains many temples. Pop. about 3000.

Balikesir, or **Balakissar**, or **Balikisri**, cap. of the Karasi sanjak of the vilayet of Brusa, Asiatic Turkey. It is situated on a fertile plain, 575 ft. high. The chief products are opium, silk, and cereals. Noted for a large fair held annually. Pop. 21,000.

Balin and **Balan**, two brothers in the Arthurian legend. They met on their wanderings, and, failing to recognise each other, fought, and both were slain. Consult Malory, *Morte d'Arthur*. There

is also an early poem called *Balan*, belonging to the Charlemagne cycle, the Eng. version of which is *The Sowdone of Babylone*.

Balinag, tn. of Luzon, Philippine Is. It is in a fertile dist., and manufs. silk and cotton. Pop. 40,000.

Ballol, **Family of**. The B. family was founded by Bernard de B., who came from Barnard Castle, and was a courtier of David I. of Scotland. Probably of Norman origin, it shared in the prosperity and prestige which the Normans attained in the Scotland of the twelfth century. It was in connection with the famous dispute concerning the heirship of the crown of Scotland on the death of the Maid of Norway (1290) that the family achieved such power that its representative and head, John de B., claimed the crown as grandson of Margaret, the eldest daughter of David, earl of Huntingdon, brother of King William the Lion. After the commissioners of Edward I. of England had given hearing to the rival claimants, the chief of whom was Robert Bruce, grandfather of the celebrated monarch of that name, their award was given to John de B., who assumed the crown of Scotland as vassal of Edward. From the first he was unpopular with the Scots, who dubbed him the Toom Tabard, or empty garment. In 1296—5 years after his assumption of the royal authority—he revolted from his vassalage, giving as his reason for so doing the wanton outrages which Edward committed upon his subjects. The Scots made an inroad into Tynedale, but were defeated with considerable loss at Dunbar (Apr. 28, 1296). B. at once submitted, and was compelled to do penance in a white sheet for his rebellion, resigning his crown, after which he and his three sons were sent to London, where they were confined in the Tower for three years, when he was released at the request of Pope Boniface, and delivered up to the papal legate. He d. in France, at his patrimonial estate of Bailleul, in 1314. Edward, his son, displayed some ambition, and in 1332, in the reign of David II. of Scotland, invaded that country, defeating the earl of Fife at Kinghorn. By means of the treachery of the Scottish nobility he again defeated the royal forces at Dupplin Moor, after which he took possession of Perth. He was crowned at Scone in Sept., but the national resistance proved too great for him to withstand, and he was routed at Moffat. After the defeat of the Scots at Halidon Hill, however, B. returned to Scotland, and attempted to dismember the kingdom by dividing it among the nobility. In 1335, deserted by the nobles, he fled to England and surrendered his claims to Edward III. He d. childless in 1363. Henry, his brother, had been slain at the battle of Moffat. John B., father of the king of Scotland of the same name, founded Balliol College, Oxford, about 1263. See B. J. Scott, *The Norman Balliols in England*, 1914.

Ballista, see **BALLISTA**.

Balistes, or **File-fish**, classified in the

Plectognathous div. of the order Teleostei, and generally known as file-fishes from the serrated spines on their dorsal fins. A peculiarity of this spine is that it can be retracted by muscular action into a groove in the underlying osseous structure, and when erected can be fixed by interlocking with a spinal projection which can be depressed and raised at will. There are sev. varieties, of which one, *B. caprisus*, is found off the coasts of Great Britain.

Balize, see BELIZE.

Balkan Mountains (anciently Hæmus), branch or sub-range of the central European mt. system, extending from the Iron Gates of the Danube to Cape Eminch on the Black Sea. The highest peak is the Shar Dagh, 9000 ft. Other peaks: Yumrukhal, 7800 ft.; Kadimlia, 7500 ft.; and Ambarika, 7300 ft. Shipka, Troyan, and Rosalita are the chief passes.

Balkan Peninsula. The, the most easterly of the three great peninsulas of S. Europe, it runs southward between the Ægean and Adriatic Seas. Its area is about 200,000 sq. m. The boundary of the peninsula is roughly a line drawn from the mouth of the Danube to the head waters of the Adriatic at Trieste. On the E. it is bounded by the Black Sea, the S. by the Marmora, and the Ægean, on the S. of the Mediterranean, and on the W. by the Ionian and the Adriatic Seas. With the exception of a stretch of ter. along the Danube, the whole of the peninsula is extremely mountainous, and this is especially noticeable in the S., where the mts. stretch down to the sea and reappear as ls. in the Ægean. In the N.E. are found the B. Mts., to the S. of which lie the Rhodope Mts. From the shores of the gulf of Salonika rises Mt. Olympus, about 10,000 ft. On the borders of Albania is the Shar Dagh, 9000 ft. In Greece is found the Pindus range, while Yugoslavia, which includes the ters. of Montenegro, Serbia, Dalmatia, and Bosnia, is a very mountainous country. The Dinaric Alps extend along the borders of Bosnia and Dalmatia. The prin. rivs. flow in an easterly or south-easterly direction. The Danube enters the Black Sea; the Maritza, Mesta, Strumna, Vardar, and Salambria enter the Ægean. The Drin and the Viossa are the only considerable rivs. that enter the Adriatic. The climate is very severe in winter, although the winter is short, but during the early spring very bitter weather indeed is experienced even in the most southerly parts of the peninsula.

The Races of the Peninsula. The Ottoman inhab. of the B. P. are rapidly declining in numbers. Turkey-in-Europe, restricted practically to Constantinople by the treaty of Sévres (1920), and in 1922 extended by a convention to Adrianople and the Maritza R., has a pop. of 1,266,000 (1935). There were 289,000 Turks in Rumania in 1930, but since then the area of Rumania has been reduced, and 500,000 Turks in Bulgaria. By far the greater part of the pop. of the

peninsula is made up of Slavonic tribes, of which the two main divs. are the Serbs and the Bulgars. The Serbs are mostly contained in the republic of Yugoslavia, which includes Croatia-Slavonia, Bosnia, Dalmatia, and the former kingdoms of Serbia and Montenegro. The total area is 248,050 sq. m., and the pop. is approximately 13 millions, of which 9 millions form the Slav element. The Bulgars number 85 per cent of the pop. of Bulgaria, which totals 6,172,000 in an area of 39,825 sq. m. (or 103,140 sq. km.). In 1930 there were 361,000 Bulgars in Rumania. Rumania, through the annexation after the First World War of Bessarabia and Transylvania, had an area of 114,000 sq. m., and its pop. was estimated in 1930 as nearly 20,000,000; but as a result of territorial changes made in compliance with an ultimatum from the Soviet Gov., Bessarabia and N. Bukovina were ceded to U.S.S.R., the area affected being 20,000 sq. m., with a pop. of 4,000,000. In Aug. 1940 Rumania ceded 3000 sq. m. of the S. Dobrudja to Bulgaria so that, by that year, the area of Rumania had been reduced to 84,000 sq. m. with a pop. of 13,291,000. The oldest inhab. of the B. P. are the Albanians, who number a million in Albania, a country of about 12,000 sq. m. S. of Yugoslavia, and half a million in Yugoslavia itself. The Gks. are the second oldest race in the B. P. Greece now extends its boundaries over Macedonia and W. Thrace. The total area of Greece is 50,271 sq. m., and the pop. (estimated in 1937) 6,936,000, but the pop. of W. Thrace is very mixed, with as many Turks and Bulgars as Gks., but, on the other hand, there are nearly 300,000 Gks. in Constantinople. The rest of the pop. of the peninsula is made up principally of Armenians and Jews. The former, greatly reduced in numbers since 1896 by massacre, are found, as the Gks., in the commercial centres of the B. P. The political questions in the Near E. are always complicated by the differences of the religious creeds which are found there. The Moslem pop. is considerably smaller than the Christian, not many of the conquered races having adopted the faith of their conquerors. Seventy per cent of the Albanian pop., however, professes the Muslim religion, and there are 1,561,000 Muslims in Yugoslavia and 260,000 in Rumania. The remaining inhab. of the B. P. are divided between the Gk. Church and the Lat. Church. The Gk. Church is divided between the Gk. Catholics and the Orthodox. There are also some Protestants. Religious toleration is now officially estab. in the peninsula, together with compulsory education and the recognised use of dialects. For some time Turkish, as the language of the conquering race, had been the official language, while Gk., because of its tradition and hist., was the language of the educated classes. The Slavonic dialects were not, however, allowed by the Slavs to die out, and with the growth of national autonomy they have come back into current use. The languages of Rumania and Albania have also been

preserved, and the latter is of great interest to the philologist, as it is the only remaining dialect of the Thracian-Ilyrians.

History of the B. P. during the Nineteenth and Twentieth Centuries. Up to the beginning of the nineteenth century the Turks were undoubtedly the sole dominant race in the B. P. The whole of the peninsula was under their sway except Dalmatia, Montenegro, and the Ionian Is. The centuries of Turkish rule had brought to the conquered races no desire to amalgamate with their conquerors, and no assimilation of the races had taken place. In the third decade of the nineteenth century the war of Gk. Independence began, an independence which was recognised by the Turks in 1829, and in 1830 the independence of Serbia as a tribute-paying principality was also recognised. The break-up of the Ottoman empire began in 1875 with an insurrection in Herzegovina. Similar revolts in Bulgaria were crushed by the massacre of 12,000 Christians, an act which alienated Brit. sympathy and paved the way for the Russo-Turkish war (1877-78). By the treaty of San Stefano a large Bulgarian principality was created as a threat to Turkey, but England and Austria, both hostile to Russia, forced a revision of this treaty at Berlin in 1878. Bulgaria was cut down to a smaller state under the suzerainty of the sultan; Serbia, Rumania, and Montenegro were independent, while Bosnia and Herzegovina were put under Austrian administration. The new states had a respite of about 20 years in which to attend to internal development. Attempts to strengthen Bulgarian national unity led to trouble with Russia and Turkey. Serbia, to obtain territorial compensation for the aggrandisement of Bulgaria by the addition of E. Rumania, made a precipitate attack on Bulgaria, but was repelled. King Ferdinand and his minister, Stambulov, with the support of European diplomacy, made Bulgaria a strong buffer state. To counteract nationalism in the B. P., Turkish despotism was increasing under Abdul 'the Damned,' who was befriended by Germany. His reign was marred not only by the Armenian massacres, but also by the oppression of the Turks themselves. In July 1908 the Young Turk party revolted, and a constitutional gov. was set up under Abdul's brother, Mohammed V. The Young Turks' foreign policy embroiled them in a war with Italy over Tripoli, and oppression in Albania and Macedonia led to the formation of the B. League on Aug. 26, 1912.

The first Balkan war began in Oct., and the allies (Bulgaria, Serbia, Montenegro, and Greece) were victorious over Turkey. Then the 'allies' quarrelled over the partition of almost the whole of former Turkey-in-Europe, and the second Balkan war followed in June 1913. *See also* under BALKAN WAR.

From 1913 to 1914 European diplomacy was making the most of the B. situation. Germany was maturing the scheme of a *Mittel-Europa*, a central

empire from Hamburg to Constantinople. Ger. influence was predominant in Turkey and Bulgaria, while Austria coveted the port of Salonika. On June 28, 1914, the Archduke Ferdinand, heir to the Hapsburg monarchy, was assassinated in Sarajevo. At the outbreak of the First World War, Turkey, Greece, Rumania, and Bulgaria declared their neutrality. The aim of diplomacy was to bring these nations into the conflict on one side or the other. By Nov. England and Turkey were at war. The prestige of the Entente suffered by the failure to force the Dardanelles in the Gallipoli campaign of 1915. As a result Bulgaria declared for Germany. The Gallipoli forces were diverted to Salonika, and from there operations were started to save Serbia from the Austrians and Bulgarians. This also failed, and Serbia was disabled in the autumn of 1915. In 1916 Rumania declared war on Austria, but was decisively defeated. The dreams of the pan-Ger. imperialists were now almost fulfilled.

In June 1917 Greece under Venizelos (*q.v.*) declared war on Germany, Turkey, and Bulgaria. A year later a general allied attack began with Salonika as base, and Bulgaria was put out of the war. (*See MACEDONIAN FRONT, OPERATIONS ON.*) The Serbians were again occupying their old cap., Nish, thus cutting the Berlin-Constantinople railway. The various treaties at the end of the war caused the growth of Rumania and the union of the Serbs, Croats, and Slovenes into the kingdom of Yugoslavia. Not long after the war, however, there were three conflicts, first, between Italy and Yugoslavia over the Dalmatian seaboard and the occupation of Fiume (1919); then between Greece and Turkey over the Gk. occupation of Smyrna (1922); and finally between Greece and Italy over a political murder, leading to the bombardment of Corfu (1923). Over these difficulties European diplomacy did its utmost to prevent a renewal of war, but was unsuccessful in the second of these cases (*see* GRECO-TURKISH WAR, 1921-22).

During the 12 years following the First World War, the B. P. states had not many successes to their credit in the difficult task of reconstruction. Yugoslavia was torn by political faction, until parliament was dissolved by King Alexander (*q.v.*), who declared a royal dictatorship in Jan. 1929. Rumania, after the elections of Dec. 1928, was ruled by the National Peasant party under Premier Maniu, and in June 1930 King Carol came to the throne by a *coup d'état*, after having renounced the succession some years before. In Greece Venizelos, who became Prime Minister of a republican Greece in 1928, tackled the problem of the port of Salonika and its 'free zone.' Bulgaria, like Hungary, smarted under territorial losses, and Albania, ruled by King Zog, was even then under It. influence.

In 1933 Bulgaria tried to form a S. Balkan bloc, consisting of Bulgaria, Greece, and Turkey, by way of political

and economic counterpoise to the Little Entente (*q.v.*). Up to that year, the great difficulty of adjusting the financial questions between Greece and Turkey, besides keeping those states aloof from each other, stultified the efforts of Kemal to lay the foundation of a Triple Entente, whose representatives should enhance the influence of their states by sitting in rotation on the council of the League of Nations. Originally Turkey declined to enter the League of Nations unless she were guaranteed a permanent seat on the council, but later Kemal relaxed this attitude. Naturally this political move caused a hostile reaction in Yugoslavia, whose Gov. endeavoured to prevent any Greco-Bulgarian understanding. A B. pact, between Yugoslavia, Rumania, Turkey, and Greece, was, however, signed at Athens, Feb. 9, 1934, by which the signatories mutually guaranteed the security of all their B. frontiers; and also, not to embark on political action against any other B. non-signatory without previous mutual discussion, nor to assume any political obligation towards any other B. state without mutual consent.

The movement for a Bulgar-Yugoslavian *rapprochement* was advanced by the signing of a non-aggression pact between those two countries in 1936, and there were also, in the same year, tentative efforts towards a Bulgarian *rapprochement* with the B. Entente (Greece, Rumania, Turkey, and Yugoslavia). The Gk. interpretation of the B. pact was made clear at a B. conference, at Belgrade, in 1936; it was that it would limit Greece's application of assistance in case of war to an attack by Bulgaria, and that it was designed to prevent her from being drawn into a war between Italy and Yugoslavia. Again, Greece did not regard Albania as a B. state within the meaning of the pact of 1934, but as a state under the tutelage of Italy. In Feb. 1938 the permanent council of the B. Entente, held at Ankara, under the presidency of Gen. Metaxas, the Gk. Prime Minister, to consider the orientation of the Entente after the It. conquest of Abyssinia and the general tension in the Mediterranean owing to It. and Ger. interference in the Sp. Civil war, described their Mediterranean policy as one of good relations and co-operation with the Mediterranean powers, Great Britain, France, and Italy. At about the same time Greece and Turkey signed a new treaty, of 10 years' duration, under which each agreed to remain neutral if one of them was attacked, and to use its mediation in case of attack on the other. By this time the general political situation in Europe had deteriorated and swift diplomatic moves were made by B. countries to safeguard their position in the event of a general European war. A non-aggression pact between Bulgaria and the B. Entente was signed at Salonika on July 31, 1938. Under this treaty (besides the provisions on mutual non-aggression) the military and naval

clauses of the treaty of Neuilly, 1919, were renounced, as also were those clauses in the Lausanne convention of 1923 respecting the Thracian frontier. The effect of this pact was that Bulgaria was thenceforward free to introduce military service and to complete her armaments without restrictions; and, further, she was at liberty to occupy with troops the Thracian frontier zone between Bulgaria, Greece, and Turkey, which had been demilitarised under the Lausanne treaty. The integrity of the three countries of the B. Entente—Greece, Rumania, and Turkey—was guaranteed by Great Britain and France in 1939 as a counter-move to the fear of Ger. penetration into S.E. Europe. The most definitive of these guarantees was the mutual aid pact between Great Britain and Turkey concluded in May 1939; this was, in effect, a long-term agreement of a reciprocal character in the interests of their national security. For the impact of the Second World War on the B. P. see EASTERN FRONT, OF RUSSO-GERMAN CAMPAIGNS, IN SECOND WORLD WAR; also GREECE, SECOND WORLD WAR CAMPAIGNS IN (1941).

Bibliography: *The Present Condition of the Balkans and of European Responsibilities*, by various writers, ed. by Luigi Villari, 1905, has historical value. Other useful works on this earlier period or before are *Turkey in Europe*, by 'Odysseus,' 1900; R. Wyon, *The Balkans from Within*, 1904; W. Miller, *The Balkans*, 1909; also Yovanovitch, *An English Bibliography on the Near Eastern Question, 1481-1906* (Belgrade), 1909. Reliable works on the period immediately preceding and following the First World War are: N. Forbes, A. Toynbee, and others, *The Balkans*, 1913; W. S. Murray, *The Making of the Balkan States*, 1912; M. E. Durham, *Twenty Years of Balkan Tangle*, 1920; W. Miller, *The Balkans*, 1923; J. A. R. Marriott, *The Eastern Question*, 1924; W. Miller, *The Ottoman Empire and its Successors* (3rd ed.), 1927; H. F. Armstrong, *The New Balkans*, 1928, and *Where the East Begins*, 1929. See also G. E. R. Gedy, *Heirs to the Hapsburgs*, 1932; J. S. Roucek, *Politics of the Balkans*, 1939; B. Newman, *Balkan Background*, 1944. Travel, etc.: E. Rüffer, *Die Balkanhalbinsel und ihre Völker*, 1869; F. K. Hutchinson, *Motoring in the Balkans*, 1910; R. Trevor, *My Balkan Tour*, 1911; H. A. Jones, *Over the Balkans*, 1923; M. E. Durham, *Tribal Origins, Laws, and Customs of the Balkans*, 1928; W. B. Turrill, *Plant Life of the Balkan Peninsula*, 1929. See also under individual Balkan nations.

Balkan War, The (1912-13), the first European war of the twentieth century. The epoch of European hist. brought to a close by this war was that which opened in 1453 with the fall of Constantinople, cap. of the Byzantine empire, which, together with the whole B. Peninsula, was submerged beneath the wave of Turkish invasion from Asia Minor. In the centuries which followed it was only gradually that one by one races achieved

a partial or complete autonomy. The decline of Ottoman power was only stayed by the jealousies of the great powers of Europe and by the rivalries of the petty B. states themselves. The Crimean war (1854-56), between Russia on the one hand and England and France on the other, was undertaken by the latter powers to maintain Turkish rule in Europe, and in 1885 Bulgaria and Serbia, for a brief period, were at war with one another because the latter country feared a territorial aggrandisement by Bulgaria in E. Rumelia. The sultan, Abdul-Hamid II., benefited from these jealousies, and thus for many years secured an immunity, during which he continued to oppress his European provs. But his misgovernment and despotism were too much for even his Mussulman subjects. He was deposed in 1909, and a constitutional regime inaugurated, with his long-imprisoned brother, Mohammed V., as sultan.

The hopes raised by the successful revolution of the Young Turks that the Christian pop. of Turkey-in-Europe would be better treated proved to be illusory. It is true, so far as the Turks themselves were concerned, that some reforms were effected. It is true also that Jews and Christians were allowed to become officers in the army, but the non-Islamic pop. (which in Turkey-in-Europe numbered about three-fifths of the total pop.) was no better off. The small states who were Turkey's neighbours in the B. Peninsula unavailingly protested against the oppression of their kinsmen in Albania, Macedonia, and Thrace. They appealed to the great powers, who formed the so-called Concert of Europe, to fulfil the obligation to which they had pledged themselves by the treaty of Berlin in 1878, but with little result. At last, despairing of anything being done by the powers, the B. states themselves decided to cut with the sword the Gordian knot. Greece had already, in 1897, fared badly in a war with Turkey. But what each state was individually too weak to accomplish might be effected by union. Sinking for a while their differences, Bulgaria, Serbia, Greece, and Montenegro combined to form the B. League, a league having for its object the safeguarding of the common interests of their nationals in the Turkish empire. By this means a striking force was formed of approximately the same strength as the Ottoman troops, with the added advantage of being able to attack on all sides at once. A suitable opportunity to commence hostilities presented itself towards the end of Sept. 1912. The Ottoman administration was then suffering from the strain of the year-old war with Italy (albeit that war was confined to its Tripolitan ter.) and the rising of the Albanians, restive under the constitutional regime. After the B. mobilisations, the powers, hastily seeking some formula which would preserve an artificial *status quo* in the Balkans, invoked the almost forgotten clause xxiii. of the treaty of Berlin—an article by which

the great powers pledged themselves to compel Turkey to introduce reforms into its European provs. But on Oct. 8 the smallest of the allied states, Montenegro, without even an ultimatum declared war. On Oct. 10 the great powers by their collective note made a last attempt to induce Turkey to grant such reforms as would avert war, and three days later an identical Græco-Serbo-Bulgarian note was presented to the Ottoman Gov. Turkey's reply to the latter was to declare war on the allies on Oct. 17. In the meantime the Montenegrins had invaded Albania, captured successively Detchitch, Skip-tchanik, Tuzi, and Berane, and had invested Tarabosh and Scutari. Also before Turkey declared war on the allies two other significant events had taken place: the admission of deputies from Crete into the Gk. Chamber on Oct. 14, and the conclusion on Oct. 15 of the peace of Ouchy (or Lausanne) between Turkey and Italy, a peace in which Turkey recognised the *fait accompli* of It. occupation of Tripoli.

Each of the invading armies by itself, and without the aid of its allies, overcame Turkish resistance in various parts of the country. Thus the Bulgarians alone, under the supreme command of Gen. Savoff, and with Gen. Dimitrieff as his prin. lieutenant, on Oct. 22 to 24 at Kirk-Killise turned the right flank of the army under Nazim Pasha, the Turkish commander-in-chief, of whose forces Mahmud Mukhtar Pasha and Abdullah Pasha were important leaders. The Turks fled from Kirk-Killise, abandoning in their flight large quantities of stores and guns. The Bulgarian losses alone were estimated at 2000 killed and 5000 wounded. By this turning movement the Turkish forces were divided: some were driven S. towards the Aegean Sea; the main body retreated towards Constantinople (now Istanbul), while the remainder speedily found themselves invested in Adrianople (now Edirne). Pursued by the Bulgarians, Nazim nevertheless succeeded in rallying his forces, and a stand was made in an engagement extending over a front of 100 m. In this great battle, known officially as that of Lule-Burgas-Bunarhissar, which was fought on Oct. 28-31, success at first seemed to attend the Turkish arms, for the right wing more than held its own, but at length the left wing was smashed in the carnage that raged round Lule-Burgas. This compelled the Turkish right and centre to fall back; the retreat again became a stampede, which was only checked at the banks of the Choriu. Eventually this position was abandoned for the stronger Chataltja lines. The casualties in this engagement reached 55,000, of which 15,000 were in the Bulgarian forces. The captures from the Turks included 75 guns, 2800 prisoners, and much stores and ammunition. The subsequent fighting before the Chataltja line of forts was desultory, owing in part to the exhaustion of the Bulgarians and their desire to avoid the epidemic of cholera which began on Nov. 7, and which ravaged the Turkish forces.

Meanwhile the Serbian forces, under Gen. Putnik, commander-in-chief, and Prince (afterwards King) Alexander, were marching on Uskub, the cap. of Old Serbia. Encountering a Turkish force under Zeki Pasha at Kumanovo, an engagement was fought there on Oct. 23-24, in which the Serbians won a victory. The Turks fled, leaving behind them 98 field-guns, 15 howitzers, and the road open to Uskub. The losses on both sides were heavy, the Turkish casualties being estimated at 6000. On Oct. 26 Uskub was occupied by the Serbian troops, and a few days later (Nov. 2) King Peter made his triumphal entry. In a short time the Serbian troops had swept over Macedonia, and a detachment was sent to occupy ports on the Adriatic. Monastir, at which the remnant of Zeki Pasha's army had gathered, surrendered on Nov. 18, and Alessio, on the Adriatic, was occupied two days later.

Unbroken success likewise attended the Gk. army, directed by the crown prince, Constantine. Advancing through Thessaly, a few minor engagements were fought with a numerically weaker Turkish force under Hassan Tahsin Bey, which retreated towards Salonika. The Turks lost 17 guns at Seldjé, and on Nov. 1 were badly beaten at Yenidje near the Vardar. The Gks. crossed this riv., and on Nov. 9 Salonika, then the second city of Turkey-in-Europe, surrendered without further fighting.

In the W. the Montenegrins were content to let disease and starvation, aided by bombardment, work their devastating effects on Scutari and Tarabosh, which were invested by them and defended by the Turkish leader, Hassan Riza Bey.

A notable feature of the war was the presence in the field of all the sovereigns of the allied states. These were King Ferdinand of Bulgaria, Peter of Serbia, George of Greece, and Nicholas of Montenegro. From the military point of view one or two facts would seem up till then to have been demonstrated: first, the utility of aeroplanes in war, of which machines Bulgaria had several; second, that the bayonet was still a most effective weapon, especially in a final assault after artillery preparation; third, that the success of the allies was largely attributable to the superiority of the Fr. (Creusot) cannon over the Ger. (Krupp) guns of the Turks. Finally, it may be observed that, on the part of the Turks at any rate, the war was regarded as a holy war, for on Nov. 8 the Sheikh-ul-Islam ordered the preaching of a jihad.

Naval operations in this war were of small importance. Three only of the combatants possessed any fighting ships—Greece, Bulgaria, and Turkey. The Turkish fleet at that time was negligible, but it served to establish a blockade of the Bulgarian coast in the Black Sea, and it bombarded a few coast towns, notably Varna. Also its presence served as a menace to the Bulgarian left wing before the Chatalla lines. On Nov. 10 the Turkish fleet in the sea of Marmora bombarded Rodosto, a Turkish tn. then

occupied by the Bulgarians. On Nov. 21 the Turkish cruiser *Hamidieh*, accompanied by two destroyers, was attacked by four Bulgarian torpedo-boats about 15 miles from Varna in the Black Sea. Turkish fire sank one torpedo-boat and damaged another, but the *Hamidieh* was struck in the bows and began to founder. Her captain—Raouf—was, however, able to bring her safely back to Constantinople. On the other hand, the Gk. Navy (strengthened by four Eng.-built torpedo-boat destroyers bought from the Argentine Republic just prior to the outbreak of hostilities) occupied the Is. of the Aegean Archipelago, beginning with Lemnos on Oct. 21, and finishing with Mitylene, Nov. 22. On Nov. 12 Turkey—after fruitlessly appealing to the powers for mediation (Nov. 4)—asked Bulgaria for an armistice. On Nov. 25 delegates met at Chatalla to arrange terms for this armistice, and the eventual peace. The armistice was signed on Dec. 3 by Turkey and all the allies except Greece, who maintained that the terms were too favourable to Turkey.

It is estimated that during the first six weeks of the war the Turks lost from all causes 200,000 men. The allies captured 500 guns, 100,000 rifles, and vast quantities of stores and ammunition. The total casualties of the B. League are put at 80,000.

In the peace negotiations in London the issue was narrowed to the question whether Turkey was willing to surrender the Aegean Is. and all her European possessions W. of Adrianople. Over Adrianople and the Is. the Turks assumed a *non possumus* attitude, and for a while the peace conference was suspended. At length, yielding to the pressure of the powers applied by a collective note, the aged grand vizier, Kiamil Pasha, advised by the Grand Council he had summoned, agreed to surrender on this point.

Before this resolution could be carried out, Kiamil's gov. was overthrown on Jan. 23, 1913, by the Young Turk party, led by Talaat Bey and the popular Enver Bey (see ENVER PASHA). Nazim Pasha, the Turkish war minister, was murdered, Kiamil resigned, and the Young Turks set up Mahmud Shevket Pasha as grand vizier. The new ministry made the retention of Adrianople a cardinal point of policy. The conference of London broke up and hostilities were resumed. During Mar. and Apr. the three centres of Turkish power in the Balkans, the garrison towns of Adrianople, Janina, and Scutari, surrendered to the Bulgarians, the Gks., and the Serbs respectively. On May 1 the Turks were compelled to sign the treaty of London. In this treaty the great powers of Europe had a guiding hand, and reserved to themselves the right to settle the boundaries of Albania and to determine the destiny of the Aegean Is. Turkey-in-Europe was confined to a piece of E. Thrace, within a boundary line drawn from Enos to Midia. The B. allies had the task of partitioning the rest of Turkey's former possessions in Europe. The div. of Macedonia was at once a

source of contention and the creation of Albania as an independent state under Austrian influence increased the friction between Serbia and the Hapsburgs eventually to cause the spark which caused the conflagration of the First World War. Austrian policy was directed towards preventing Serbia from gaining ter. on the Adriatic, thus cutting off possible Austrian expansion towards Salonika and the Aegean Sea. On the other hand, Nicholas II. of Russia, coming forward in the historic role of protector of the Slav peoples, offered to act as arbiter in the Macedonian dispute. Bulgaria, however, was under Teutonic influence, and on June 29, 1913, the Bulgarian army made a treacherous surprise attack along the Gk. and Serbian lines in Macedonia. A month's fierce fighting followed between the B. allies. Rumania advanced upon Bulgaria from the N. and occupied the ter. of Silistria. Bulgaria was forced to make peace, and on July 30, 1913, the treaty of Bucharest was signed, thus bringing to an end the second Balkan war. By its terms Bulgaria was excluded from Macedonia, and Adrianople reverted to the Turks. Rumania, Montenegro, Serbia, and Greece made large territorial gains. The two wars had caused the death of nearly 350,000 men.

Consult J. R. Schurman, *The Balkan Wars, 1912-13*, 1913; D. J. Cassavetti, *Hellas and the Balkan Wars, 1913*; R. Rankin, *Inner History of the Balkan War, 1914*; M. E. Durham, *The Struggle for Scutari, 1914*; E. and S. Ashmead-Bartlett, *With the Turks in Thrace, 1913*.

Balkh, cap. of a principality of that name in N. Afghanistan, and once known by its Persian name Bakhtri as the cap. of anct. Bactria. It is situated 23 m. S. of the R. Oxus and the ruins of its anct. site are still discernible, having a circumference of at least 20 m. Four m. to the eastward lies the new tn., called Mazr-i-Sherif, the modern Afghan cap. of the prov., with a pop. of about 30,000. It was here that the Græco-Asiatic civilisation first found expression, but even before this the magi of Persia founded the Zoroastrian religion. On the death of Alexander the Great it became incorporated with the Græco-Syrian kingdom of the Seleucidae, and later figured as a centre where Buddhist propaganda was disseminated. The natives designated it Am-ul-Beled, mother of cities, and trusted in its rehabilitation to the condition of its anct. splendour. The neighbouring soil is fertile, and large quantities of wheat are grown.

Balkhash, a lake lying in the vicinity of the Kirghiz steppes, and contiguous to the ter. of Semipalatinsk in Kazakhstan. It is 150 m. in length, with a breadth of half that distance, and is the fourth largest inland sea in the U.S.S.R. For six months in the year, from Nov. onwards, it is frozen over. During the rest of the year it is open to water-borne traffic, and shipyards have been put in operation at the mouths of the Karatal,

Lepsa, and Ill Rs., which are the chief rivs. feeding the lake.

Ball, Games of. Originally the game of B. had probably a religious significance, and some of the pastimes into which the use of the B. or sphere enter, such as the B. game of certain Amer. Indian tribes, or that of the anct. Mexicans, are known to have possessed an astronomical basis. Again, the struggle of good against evil is thought to have been typified by certain anct. Persian B. games, the sphere in this instance representing the world. In Greece and Rome in classic times various B. games were indulged in by young and old, and in medieval England and France tennis and pell-mell were favourite pastimes. In more modern times first golf, native to either Holland or Scotland, and cricket were evolved as B. games, and football, perhaps the most popular of all, has been a game of both the Scottish and Eng. people for centuries. Polo and baseball, the latter a game of Amer. origin, lawn tennis, lacrosse, and basket ball are other modern B. games.

Ball, Albert (1896-1918), Eng. air pilot, b. at Nottingham, son of Alderman Sir Albert B., sometime mayor of Nottingham. On the outbreak of the First World War, B. joined the Sherwood Foresters; later he was seconded to the Royal Flying Corps, reaching the rank of captain. A single-seater pilot by temperament, he was transferred, in 1916, to the 11th Squadron, to fly the then new Nieuport Scout machine; and on May 29 of that year he brought down the first of his long list of enemy aeroplanes. Awarded the V.C., D.S.O., and M.C. Killed in action May 7, 1918.

Ball, Sir Alexander John (1757-1809), Eng. admiral, served in the Mediterranean under Lord Nelson. In 1799 he was elected by the Maltese as their chief and the president of their congress. He became rear-admiral, 1805. Nelson thought him a 'great coxcomb' before B. received a command; but afterwards, when B. was continuously employed, they became close friends. B. served under Nelson at the battle of the Nile, where his ship *Alexander* was the particular opponent of Bruce's flagship *L'Orient*, which blew up. He proved a very popular governor of Malta, being solicitous for the interests of the Maltese.

Ball, Charles James (1851-1924), Brit. archaeologist. Taught classics at the Merchant Taylors' School, appointed chaplain at Lincoln's Inn, and then given the rectory of Blackington, Oxon. Lectured on Assyriology at Oxford Univ. and held univ. professorship in that subject. Wrote numerous works on Assyriology and Heb.: *Merchant Taylors' Hebrew Grammar* (1878); *Inscriptions of Nebuchadnezzar* (1887); *The Metrical Structure of Qînôth; Iranian Names among the Hetta-Hatti* (1888). Also studied Chinese, his work, *Sumerian and Chinese* (1913), attracting attention from the theory advanced in it that the Chinese language and characters were derived from the Sumerian.

Ball, John (d. 1381), agitator who assisted to stir up the people during the rebellion headed by Wat the Tyler in 1381. His propaganda spread like wildfire among the peasantry, and spurred them on to many excesses. On the collapse of the revolt and the death of Tyler he was captured and hanged at St. Albans, July 15, 1381. See C. E. Maurice, *Lives of English Popular Leaders in the Middle Ages*, vol. II., 1875; William Morris, *A Dream of John Ball*, 1888.

Ball, John (1818-89), Irish scientist, politician, and traveller. He was called to the Irish Bar, 1845; became M.P. for co. Carlow, 1852; under-secretary of

for painting and sculpture. In 1852 he made busts of Jenny Lind and Daniel Webster; his other chief works are the statue of Washington in Boston Public Garden, of Webster in the Central Park of New York, and the group of 'Emancipation' in Washington. See his autobiography, *My Threescore Years and Ten*, 1891.

Ballachulish, vil. and par. on the S. banks of Loch Leven in Argyllshire, Scotland. The staple industry is the quarrying of marble and slate. The name is derived from the Gaelic *Baile-na-coolish*, the vil. on the strait. Pop. 1500.



Valentine, Dundee

LOCH LEVEN AND THE GLENCOE MOUNTAINS FROM NORTH BALLACHULISH

state for the colonies, 1855-57; and first president of the Alpine Club, 1857. He pub. the *Alpine Guide*, 1863-68, and wrote works on physical and geographical science.

Ball, Sir Robert Stawell (1840-1913), Irish astronomer, b. in Dublin, 1840, and educated at Trinity College. Lord Rosse, the celebrated authority on astronomy, appointed him his astronomer in 1865, and in 1873 he was created prof. of applied mathematics in the Royal Irish College of Science. In the following year he quitted that post to fill the more important one of prof. of astronomy at Dublin, with which went the office of astronomer-royal for Ireland. His best-known works are *The Story of the Heavens*, 1885; *In Starry Realms*, 1892; and *In the High Heavens*, 1893. D. at Cambridge.

Ball, Thomas (1819-1911), Amer. sculptor, b. in Charlestown, Massachusetts. In early life he was a distinguished basso, but soon gave up singing

Ballad, poetical composition narrative in matter and lyrical in form which generally recounts some legend or story. It must not be confounded with the ballade (q.v.). This type of composition was known to the Gks. and Roms., who utilised it for laudatory purposes. Such Bs. were almost invariably accompanied by symbolical dancing until the fashion of accompanying them on the lyre or harp brought the custom into desuetude. Subsequent to the fall of the Rom. empire we find the *saga* form in general use among bards, jongleurs, and minstrels, and the B. as we know it to-day is thought to have evolved from it. On the other hand, it is advanced with some reason that the *saga* may have grown from a collection of Bs. on any cognate subject, for example, the siege of Troy or the deeds of any hero or house of heroes as the Nibelungs or Hukings. But it is in its lyrical form that we must here consider the B., which originally received its present name and shape in the Italy of the twelfth century.

It is, however, in N. Europe rather than in the house of its modern origin that the B. has risen to highest distinction, and although the Bs. of the Ger. poets Uhland, Bürger, Goethe, and Schiller certainly touch a level of the highest excellence as regards both composition and romantic feeling, it is to our own country we must look for the B. in its most natural form. Perhaps the most perfect specimens of the Brit. B. are those to whom no authorship can be assigned, but the works of Scott, Burns, Wordsworth, Tennyson, and Coleridge contain examples of this type of story-song.

What is true of folklore may be also held true of folk-song. The plots utilised in the B. are few and of world-wide acceptance. As the epic, folk-tale, fairy-tale, and *Märchen* are all universally wrought on the basis of a few venerable plots, so the material for the folk-song is almost equally scanty. These bases of the B. are among the romantic heritage of the sev. European peoples as much as is the story of the 'fatal children' common to all mythologies, or the tale of the neglected daughter, the origin of so much matter of faery. We may even be enabled to trace mythologic processes in the B., but we will first examine its universality. We have, for example, the tale of the girl who follows her 'fause luvie.' Such is the subject-matter of *Burd Ellen*, one of the most touching ever sung to the harps of the 'North Countrie,' and such is the plot of the Bs. in Fr., Dan., and other tongues. Again, we have the B. of the girl who, doubting her lover, is taken by him to a secret place, and is there told by him that she must die. By a trick she succeeds in taking his life instead. Such a plot is almost universal. In the Bs. of Bürger and Goethe, modelled on older types, we notice that the shades of the departed act as if alive. They return to lie beside their lovers until cock-crow, and rise on swift steeds on which they often carry off the object of their earthly affections. So acts Clerk Saunders in the old Scottish B., and so do scores of ghostly wights in the Bs. of all lands. This conception is drawn from Norse mythology. For example, we find in one of the Norwegian sagas the wife returning to the dead husband who is buried in the great mound on the moor by his dwelling. We thus find the same machinery employed throughout the Bs. of many lands, however different the local colouring may be. But there are other marks which betray the universality or B. idea beside sameness of plot. For example, we are never far away from the talking bird or the chorus of birds, the 'wee birdie' of the Scottish Bs. which with warning accents bids the 'bonnie may' beware of the 'fause Sir John.' Again, we find that the generality of B.-mongers have a decided partiality for gold and silver, and that the heroes and heroines of their songs are always mightily bedizened. They are liberally bedecked with the 'red goud,' and 'siller' is always plenteous. They have 'roses till their shoon,' and a great display of feathers.

Their body-linen is invariably white as snow, and the cramoiisy and satins they wear are minutely specified with all the snobbery of a sycophantic bardhood. But there is wretchedness too. Hynd Horne and his like who come to claim their own are dressed as beggars, but the lordliness shines through their rags, and after receiving hospitality—they usually ask for a drink for the sake of their own memory to find how it will be received—they stand forth in their native dignity and are duly remembered. In the refrains of such—in *Hynd Horne* it is 'The birk and the broom blooms bonny'—we find many allusions to plants. We know not the wherefore of this popularity of the heath plants, which permit their names to recur in B. refrain alternately with 'down-derry-down,' and the like, but some deeper significance probably lurks behind what would seem to be mere caprice. Ghastly crime is often, too, found in the B. motif. The Lammikin who slaughters his may (maid), the luckless 'childe' who is drowned or smothered—invariably the possessor of 'gouden locks'—recur among the old, unhappy, far-off things with the dastard groom who goes in his master's stead to his lady's bower, and is slain by his exasperated lord.

In the limits of such an article as this an extended review of B. literature is manifestly impossible, and a brief hist. of the B. form in the sev. European countries in which it has found favour must necessarily suffice.

The B. in Britain. No B. forms of Brit. origin of a greater antiquity than the fourteenth century may be said to have come down to us. Of the thirteenth century we have such specimens as *Kyng Horn*, *Sir Tristram*, *Haveloc*, and *Sir Gawayne*, which partake more of the nature of extended romances than Bs. proper, and it may be further laid down that any specimens of a date anterior to this are mere Eng. translations of Fr. examples. In the fourteenth century the native Eng. composition began to find favour with the people to the detriment of the Fr. importations, and the era of its introduction appears to have been that of its highest ascendancy and its most abundant and felicitous production. In succeeding centuries the B. form became gradually neglected and remained so until the period of its resuscitation by Bishop Percy, after a period of nearly 300 years. In his *Reliques of English Poetry* that celebrated antiquarian laid the foundation of that immense vogue of the romantic which dominated Eng. poetry for the next century.

The material whence Sir Walter Scott's *Minstrelsy of the Scottish Border* and its like was drawn was in all probability for the most part 'made' in the fifteenth and sixteenth centuries. The *Ballad of Sir Patrick Spens*, for example, is regarded by some as a modern forgery, yet in its machinery and circumstances it bears the stamp of eld. It was probably written in the sixteenth century from a still older B. contemporary with the times of which

it sings—the days succeeding the death of Alexander III. of Scotland, when the Maid of Norway was called to the throne. We may take it that most of the B. material that survived into the eighteenth century lost completely its original form and phraseology. This is clear, for example, in such productions as *Thomas of Erceldoune* and *Sir Tristram*, attributed to the hero of the first B. It is strange to find matter superior to that of the contemporary poets of the sev. eras through which these Bs. passed and survived handled by the mere verse-makers of the day. For it was not the Chaucers, the Dunbars, the Lindsays, or Spensers who fostered the B., but the Blind Harrys, the Hucheons, and the 'borrel' or rustic minstrels.

The literature of the Brit. B. has been examined by Furnivall, Ritson, Madden, Halliwell, and others, and especially by Prof. F. J. Child (q.v.).

The B. in Germany. Although the *Volkslieder* of the Ger. peoples is a form of considerable antiquity, it probably attained its present type at the hands of the minnesingers who clustered around the courts of the landgraves and petty kings of the Germany of the Middle Ages. At the court of Hermann, landgrave of Thuringia (c. 1180-c. 1200), poetical effort reached a high standard, and such singers arose as Wolfram von Eschenbach and Gottfried von Strassburg. Such 'epics' as the *Parzival* and *Tristan* of these poets were the lineal ancestors of the B. form, and we find their echoes in many a later effort. In the *Heldenbuch*, or great book of national heroes, and the *Nibelungenlied* we find gathered together a number of Bs., the sequence of which assists to make up a completed whole. During the fifteenth century a satiric type of B. arose, and was succeeded by the comic B. of which *Till Eulenspiegel* is the form *par excellence*. During the Lutheran period the B. declined, but upon the romantic renaissance which in Germany had as its protagonists Klopstock, Wieland, and perhaps Lessing, the B. returned to fostering influences, and in the hands of Bürger, Goethe, Schiller, and Uhland attained perfection. The Bs. of modern Germany do not possess the almost child-like brightness of those of the old *Minne-lieder*, but are marked by a gloomy grandeur and mysticism.

The B. in France. The earliest Fr. B.—perhaps the only one of early origin that has survived—is that of *Aucassin et Nicolette* (really a *conte-fable* or *nouvelle*), and with the withering of the Langue d'Oc before the Langue d'Oïl practically all the B. poetry of the former dialect must have vanished. Such 'epics' as the *Chanson de Roland*, *Ogier le Danois*, and the like, were probably a conglomeration of Bs. During what may be called the Arthurian period the B. appears to have been lost among the romances which, if they partook of the B. form, and were sung in the same manner as a B., were yet too extended to justify their inclusion in the same nomenclature. In medieval France, in short, the B. ran to a

more extended and epic form, and thus lost that simplicity and brevity which were its chief characteristics. It is not until the fifteenth century that we get back to anything like the B., the rather affected and frigid efforts of Charles d'Orléans possessing some slight affinity with its *genre*. Villon, too, had B. affinities which, however, were counter-balanced by his richness of fancy and display of effort. With the rise of the romantic school in 1830, the B. came back to its own, and in the works of Victor Hugo, Gautier, Sainte-Beuve, and Émile Deschamps received liberal treatment and recognition.

The B. in Spain. Sp. literature is rich in Bs. Perhaps the earliest type is that of the *Poema del Cid*, probably, like most early epics, composed of numerous Bs. joined into a compact whole. The strife with the Moors inspired many Bs., which in their turn might have been welded into another epic like the *Cid* had the master-hand been present. These are mostly anonymous, and deal with the deeds of noble knights, the love of fair ladies, Sp. and Moorish, and other chivalric matter. A good idea can be had of the quality of these Bs. by a perusal of Lockhart's *Spanish Ballads*. In Spain the B. has mostly to do with romance pure and simple. A peasant or bucolic muse arose separately, but although it approximates at times to the B. type it cannot altogether be classed with it. The Bs. of Spain are in general composed in a more varied metre than those of other European countries, and have furnished many Brit. poets with models for the composition of narrative verse.

In other countries of Europe the B. may be said to have followed a course similar to that indicated in the case of those countries dealt with. The foreign type of B. which bears most resemblance to the Brit. is the Scandinavian (Dan., Norwegian, and Swedish), and there can be no doubt that sev. of our Bs. are direct Scandinavian importations, whilst the reverse can also be maintained. Norman-Fr. forms also display some connection with ours, and the Bs. of Brittany exhibit what might be described as a territorial connection with those of this country. The B. is by no means confined to Europe, and the various Asiatic countries possess forms which closely approximate to the European. S. America, too, has a B. literature of its own, and the U.S.A. is by no means destitute of folk-songs cast in B. form.

Bibliography.—COLLECTIONS: T. Percy, *Reliques of Ancient English Poetry*, 1765; J. Ritson, *Pieces of Ancient Popular Poetry*, 1791; Sir W. Scott, *Minstrelsy of the Scottish Border*, 1802-3; F. J. Child, *The English and Scottish Popular Ballads*, 1857-8, 1882-98 (with bibliography); Sir A. T. Quiller-Couch, *The Oxford Book of Ballads*, 1910; L. Pound, *American Ballads and Songs*, 1922; B. von Münchhausen, *Meisterballaden*, 1923. CRITICISM AND HISTORY: F. B. Gunmere, *The Popular Ballad*, 1907; T. F. Henderson, *The Ballad in Literature*, 1912; L. Bianchi,

Novelle und Ballade in Deutschland, 1915; R. Graves, *The English Ballad*, 1927; L. C. Wimberley, *Folklore in the English and Scottish Ballads*, 1928.

Ballade, a form of verse consisting of 3 stanzas of 8 or 10 lines, concluding with an envoi of 4 or 5 lines. Each stanza must include 3 rhymes only, and the same rhymes in the same order must occur in each of the succeeding stanzas throughout the B. Each stanza, as well as the envoi, must have the same refrain. The envoi usually contains the dedication of the poem to some particular person, and often commenced with the title of the person to whom it was addressed, as 'prince' or 'sire.' It forms the climax of the poem. The B. is usually classed by prosodists among the forms utilised as *vers de société*. It must not be confounded with the ballad (q.v.). Modern lis. of excellence have been written by W. E. Henley, A. C. Swinburne, Austin Dobson, Andrew Lang, Oscar Wilde, G. K. Chesterton, Bayard Simmons, Paul Selver, Hilaire Belloc, and Théodore de Banville (q.v.), who brought this and other medieval Fr. forms into fashion again. It is essentially an antique form modernised, and was probably first perfected by Villon.

Ballagi, Moritz (1815-91), Hungarian philologist and Protestant theologian who studied at Paris and at Tübingen. He edited the journal *Protestans egyházi és iskolai lapok*; but he is chiefly known as a philologist, his works consisting of Hungarian-Ger. dictionaries and a grammar.

Ballance, John (1839-93), New Zealand Premier, b. at Glenavy, Antrim, N. Ireland. He emigrated to Wanganui, where he was first a shopkeeper, then a journalist, and the founder of the *Wanganui Herald*. He took an active part in the Maori war of 1867. In 1875, he entered the House of Representatives; in 1878 became treasurer in Sir George Grey's ministry; resigned in 1879. He re-entered Parliament in 1884 as minister of lands and native affairs; became leader of the Liberal opposition in 1889, and Prime Minister in 1891. In politics he showed himself broadminded, and his treatment of the Maoris was pacific.

Ballanche, Pierre Simon (1776-1847), Fr. philosopher, b. at Lyons. Early in life he succeeded in joining the literary circle represented by Madame Récamier and Chateaubriand. He was an exponent of the theocratic school of philosophy, being opposed to rationalism and upholding revelation and authority. His prin. work is *Palingénésie*, divided into three parts: I. 'L'Orphée'; II. 'La Formule'; and III. 'La Ville des expiations.' In these works he may be said to outline the hist. and philosophy of the world, past, present, and future. His later *Vision d'Hébal* contains the supposed prophecies of a chief of a Scottish clan gifted with second sight, who sets down what he sees of the future hist. of the earth. See C. Huut, *La Vie et les œuvres de Ballanche*, Paris, 1904.

Ballantine James (1808-77), Scottish

author, b. in Edinburgh. He is known for *Gaberlunzie's Wallet* (1843), a miscellany in which the items are supposed to be drawn from the wallet of a wayfaring pedlar. He was also the author of *The Miller of Deanhaugh*, and of some of the liveliest of Scottish humorous songs. He completed successful designs in a competition, the purpose of which was to provide stained-glass windows for the House of Lords in 1844.

Ballantine, William (1812-87), Eng. serjeant-at-law, b. in London. Educated at St. Paul's School, he was called to the Bar in 1834, and being disposed to a literary and theatrical life, soon acquired a number of friends connected with these professions. His most famous case was the one in which he defended the Tichborne claimant. He successfully carried off sev. causes célèbres, especially that of Franz Müller, who was tried for murder in 1864. He also acted for the gawkwar of Baroda in 1875. He d. at Margate. Anecdotes of B. will be found in Montague Williams's *Leaves of a Life* (1890).

Ballantrae, fishing vil. in S.W. Ayrshire, Scotland, and brought into prominence from the fact that R. L. Stevenson's novel *The Master of Ballantrae* deals with its topography. Formerly it was a reputed haunt of smugglers. Pop. of par. 1300.

Ballantyne, James (1772-1833), Scottish editor and publisher, was b. at Kelso. As a young man he founded the *Kelso Mail*, and was the first to introduce an improved style of printing into Scotland. This attracted the notice of Sir Walter Scott, whose productions he printed, not hesitating to advise certain alterations in the subject-matter of the MSS. In 1826 the company of which he was the head became involved in the bankruptcy of Messrs. Constable. B. distinguished himself in the eyes of his contemporaries as a judge of dramatic literature.

His brother John was b. at Kelso in 1774. He took part in the business of his brother, and was known as a judge of *objets d'art* and works of antiquity. He pub. separately a number of celebrated works, notably Scott's ed. of the *British Novelists*, and the works of Beaumont and Fletcher. He also ed. two periodicals, *The Visionary* and *The Saleroom*. He d. at Melrose in 1821.

Ballantyne, James Robert (d. 1864), Scottish orientalist; was superintendent of the Gov. Sanskrit College at Benares from 1845, and librarian to the India Office, London, 1861. He made translations from the Sanskrit, and wrote on oriental subjects.

Ballantyne, Robert Michael (1825-94), Scottish author, b. at Edinburgh. His descriptions of the life of the trapper and hunter dwelling in wild outposts gave him a reputation as a writer of books of adventure for boys, and his informative and interesting method of writing from personal experience has given his work a value not often associated with fiction of its class. Among his best known books are *Ungava* (1857) and *The Coral Island* (1858).

Ballarat, or **Ballaarat**, city of Victoria, Australia, 74 m. by railway W.N.W. of Melbourne. It is famous for its goldfields, which were discovered in 1851, and still yield a considerable revenue. But whereas the auriferous soil was found almost at the surface in the middle of last century, it has now to be sought at a depth of about 2500 ft., and quartz mining has become the staple industry of the dist. The deepest mine, S. Star, yielded, from 1851 to 1930, over £85,000,000. The community is divided into B. E. and W., the pop. of the two portions aggregating 40,000. The city is modern in construction, and possesses many handsome buildings, besides factories, breweries, and mills. There are Anglican and Rom. Catholic cathedrals, art galleries, botanic gardens, an observatory, a museum, and a school of mines affiliated to the univ. of Victoria. B. is the second city of Victoria; it is an important railway junction, and, being nearly 1500 ft. above sea level, has an excellent and healthy climate. On Dec. 3, 1854, the method of licensing miners brought about a serious riot which culminated in a veritable battle known as the Eureka Stockade, where over 500 miners were attacked by 270 troops and police, who captured the stockade; about 30 miners were killed and some 60 wounded. Pop. 39,500.

Ballard, name of a famous family of Fr. printers of music who held the monopoly of their business for two centuries, handing it down from one generation to another until the Revolution. They were enabled to resist all innovations in music-printing by their privilege, and were supported by the court. Robert B., the founder of the firm, received his privilege from Henry II. in 1552; and each generation of the family was confirmed in its monopoly by successive royal commands until 1793, when monopolies were abolished by the Revolution.

Ballast, term used to denote any weight placed in a ship's hold, with the object of sinking her deeper in the water, to secure proper stability and safe sailing, when her cargo is too light. B. may consist of gravel, stone, sand, iron, or water. Modern steamers carry tanks forward, aft, and amidships, which can be filled with water to regulate the trim of the boat. The term is also applied to bags of sand and gravel used to steady a balloon. The word is used in engineering to denote the gravely material laid as packing between railway sleepers.

Ballater, vil. in Aberdeenshire on the R. Dee, 36 m. W.S.W. of Aberdeen. From its proximity to the royal residence of Balmoral and the numerous beauty spots of that part of Aberdeenshire, it is a favourite tourist centre. It is renowned for its chalybeate springs. Pop. 1500.

Ball Bearings, hard steel balls surrounding a shaft or axle, intended to lessen friction by substituting rolling for sliding contact. Where a fixed bearing is used, the journal, or portion of the shaft within the bearing, slides over the surface of the encircling material; such movement

not only causes the wearing out of the parts in contact, but necessitates work being done to overcome the friction. Both of these disadvantages may be minimised by efficient lubrication, that is, providing a thin film of oil between the journal and the bearing. Theoretically, the resulting friction is reduced to the reluctance of the fluid to move over either surface; but practically it is impossible to maintain an absolutely continuous film of oil. For light loads and moderate speeds it has long been the custom to place a row of balls between hardened surfaces, called ball-races, on the rotating piece and the stationary piece. The balls roll over these surfaces if properly adjusted, and the only sliding friction which occurs is between ball and ball, and if the balls are of good shape and well lubricated, this is not considerable. The qualities of an efficient B. B. are therefore hardness in the balls and races, perfect sphericity and equality of diameter in all the balls, and a good lubricating arrangement. The races may be plane or concave, the best results being obtained where the races are curved to a radius of two-thirds of the balls' diameter.

Ballenstedt, tn. and health resort in the duchy of Anhalt, Germany. It is situated near the Hartz Mts., and contains a palace of the dukes of Anhalt, famous for its library and paintings. The tomb of Albert the Bear, margrave of Brandenburg (1100-70), was recently discovered there. Pop. 7000.

Balleny Isles, group of volcanic is. in the Antarctic Ocean discovered by John B. and H. Freeman, the commanders of two vessels sent out on a sealing expedition to the S. Seas, in 1838. The group was first seen Feb. 9, 1839. It consists of five is. which, proceeding from E. to W., are called Sturge Is., Buckle Is., Borradaile Is., Young Is., and Row Is. Young Is. rises to a peak, called Peak Freeman, which is 12,000 ft. above sea level. Whales, penguins, seals, and Cape pigeons are numerous. Thick fogs are frequent, and navigation in the neighbourhood of the is. is dangerous from drifting ice.

Ballet, The, in all probability originated in the semi-religious dance ceremonies common to nearly all primitive peoples, in which certain mythological personages are represented as enacting in dumb show various incidents in their careers. Thus we have well-defined Bs. in the dance ceremonies of the snake societies of the Hopi and Moqui Indians of New Mexico and Arizona, the Gueguense B. of the Maya, and the theatric Bs. of the people of the S. Sea Is. In anc. Greece the corybantic dances partook of the nature of Bs. In medieval Europe the B. seems to have been more nearly evolved from the spectacle with which we find the courts of Charles IX. in France and James IV. in Scotland especially connected. From these, as from the early pantomime of Italy in the late fifteenth and the sixteenth century, we find the B. proper emerge in sixteenth-century France, where Baltazarini (q.v.), master

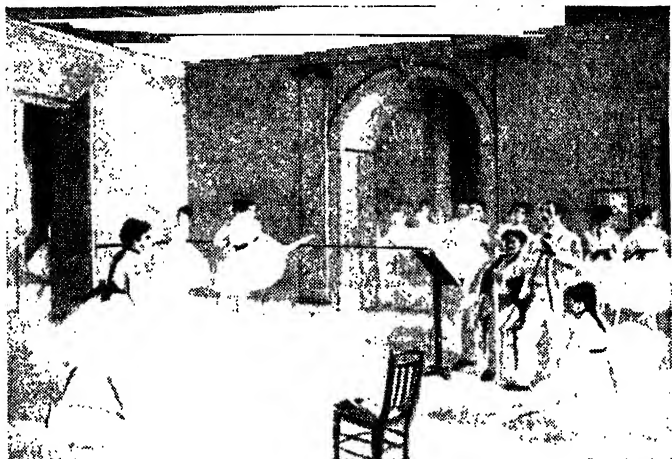
of the music to Catherine de' Medici, developed the *B. comique*, which later had rival forms in the *B. héroïque* and the *B. historique*. Later, the mythological matter of Greece and Rome found favour as *B.* subjects in the eyes of the Grand Monarque, who did not disdain to take part in them, and who alluded to himself as the God of Dancing. The *B.* form of modern times was first given its present shape by Noverre, who in the middle of the eighteenth century attempted to treat the highest themes in the light of this art-form. The *B.* in England has departed considerably from the more classic type still in vogue on the Continent, where the various centres of grand opera maintain schools for the training of persons of both sexes in the art. The schools connected with the opera in Paris, Brussels, Milan, Berlin, and St. Petersburg (now Leningrad) have been especially famous and are still notable. Differences in training exist between the Fr. and It. schools, but the latter is thought to adhere to the more rigidly classical forms and methods. The prin. exponents of the *B.* in England early in the twentieth century were Mlle Adeline Genée, a lady of Dan. extraction, and Mlle Lydia Kyasht, a Russian dancer, who appeared in most of the productions at the prin. London houses. The Lanner family were for many years the premier individual trainers of this form of dancing in England. In 1906 a new type of *B.*, perfected by Isadora Duncan (q.v.), an Amer., was introduced into Europe. In 1907 she went to St. Petersburg, and her type of dancing—with bare feet, classical draperies, and graceful 'natural' poses, instead of black shoes, *B.* skirts, and toe-dancing—had considerable influence on the development of the Fokine type of Russian *B.* The Imperial Russian *B.* instituted in 1735, developed extraordinarily, and in the nineteenth century, when the art was declining throughout the rest of Europe, it was at its greatest brilliance and vitality. The Russian schools of dancing were state institutions, and the members of the *corps de ballet*, after a career of about 20 years, were pensioned off like other civil servants. Anna Pavlova, who first visited England in 1910, introduced there the Russian style of dancing; she was immensely popular, and every time she returned was as successful. The Russian *B.* itself was brought to Europe by a band of dancers from the Russian Academy of Dance, who, under the direction of Serge Diaghilev (q.v.), toured the Continent with a series of extraordinarily effective *Bs.*, very modern in character, and by no means conforming strictly to the regular imperial tradition. Until 1912 Michel Fokine was *B.* master; in 1913 that post was taken by Vasilv Nijinsky, who, with Tamara Karsavina, was leader of the *B.*, one of the characteristic features of the Russian *B.* being the equal importance of male and female dancers. The costumes and stage settings, designed by Bakst and Benois, were brilliant and spectacular. In 1917 Leonide Massine produced his first *B.*

Among the most notable dancers of the Russian school may be mentioned Anna Pavlova, Tamara Karsavina, Lydia Lopokova, Lydia Sokolova (in reality an Englishwoman, Hilda Munnings), Vasilv Nijinsky, Leonide Massine, and Adolf Bohm. The *B.* has naturally had some considerable effect on music, and many of the most remarkable if not the greatest efforts of composers of note have been directed towards it. The *B.* music of Schubert, Gounod, Delibes, Massenet, and others is too widely known to require description. Perhaps the first opera in which the *B.* was connected with the opera proper was the *Orfeo* of Gluck, who wrote special music for the accompanying *B.* Tchaikovsky, Stravinsky, and Debussy have all composed for the Russian *B.*, and the works of Schumann, Chopin, Scarlatti, Rossini, etc., have been adapted to it with equal success. Among the best known of the Russian *Bs.* are: *Luc des Cygnes* (Tchaikovsky), *La Boutique fantasque* (Rossini), *Petroushka* (Stravinsky), *Scheherazade* (Rimsky-Korsakov), and *L'Oiseau de Feu* (Stravinsky).

The Russian *B.* of these years is a blend of the Fr. tradition, through Christian Johansson (1817-93), a Swede, who made his debut in St. Petersburg in 1841, with the It. tradition of Enrico Cecchetti (1850-1928). The Fr. tradition, carried on by Marius Petipa (1819-88), is really the more predominant element in the Russian school, and indeed it was Gerdt, a pupil of Johansson, who first perceived Pavlova's exceptional gifts and developed her frail physique on appropriate lines; but all three, Johansson, Petipa, and Cecchetti, moulding generations of Russian dancers, developed Russian *B.* into a system which became the ideal of dancers everywhere. Cecchetti, it has been well said, did not consciously devise a system of education or even inquire into the artistic nature of dancing; he was a great dancer, and became a great *maestro* or teacher of dancing, and Diaghilev chose him to train his dancers. Cecchetti completed the training of Karsavina and Nijinsky and taught Massine, Lifar, Danilova, and Markova, and also many in England, especially Ninette de Valois and Marie Rambert. Virginia Zucchi (b. 1851), an It. dancer who went to St. Petersburg in 1878, dominated the Russian *B.* for nearly 10 years, revealing herself as one of the most accomplished mimes in the hist. of dancing, and her influence was great enough to convert both Diaghilev and Benois into *balletomanes*. Other prominent Russian ballerinas of modern days include Mathilde Kchesinka, of Polish descent, who excelled in roles like *Esmeralda*; Olga Preobrajenska, notable in comic roles, and Vera Treflova, who danced in London in 1921 for Diaghilev. Pavlova, however, outshone all; so much so that good judges think that even when Diaghilev was making modernistic experiments, Pavlova's art made his technique seem old-fashioned; for through Fokine's influence Pavlova held to the standards of the main tradition and yet eventually pursued

her own way, an individualist harmonising new and old. Nijinsky, who succeeded Fokine in the Diaghilev B., was an exponent of classicism, yet he showed that B. could successfully widen its scope so as to exploit contemporary subjects. None the less his dancing in, *e.g.* *Les Sylphides*, was more impressive than any of his experimental or non-traditional work. Massine, too, was a creative artiste, who, like Nijinsky, could extend the frontiers of B. without distortion, and Balanchine, who followed after Massine in the Diaghilev R., was also a traditionalist. The inference from experience,

W. Europe, though later B. became a popular form of light entertainment at the Empire and the Alhambra theatres. Towards the close of the century Adeline Genée appeared at the Empire, holding the stage for the next 10 years, and her influence in Eng. B. has been most marked. During the first decade of the present century the Russian dancers, Lydia Kyasht and Anna Pavlova, settled in England, while Phyllis Bedells was the first distinguished Eng. ballerina at the Empire. The Diaghilev company came in 1911 and gave the impetus to the vogue of B., regarded as a serious art, and



Druet

'THE REHEARSAL,' BY DEGAS

A ballet school scene in the foyer of the Opera House, Paris, 1872.

therefore, seems to be that in spite of apparent occasional revolutionary changes, the B. remains fundamentally unchanged, and only in inessentials, such as a change in choreography, is there any difference. Modern Russia has not found a new technique in spite of early experiments and seems to-day no longer even to desire it.

B. in England. B. in England had its origins in the masque as resuscitated in the folk-dance. But in the long period between the disappearance of the masque and the modern folk-dance movement B. in England existed only in the performances of talented foreign visitors like Taglioni and Grisi in the earlier part of last century. There were some notable Eng. dancers, such as Adeline Plunkett and Clare Webster, but they were exceptional. England, however, really shared the decline which followed the heyday of the romantic B. throughout

very soon Eng. dancers were becoming members of Russian *corps de ballet*. It was only with the arrival of Anton Dolin as *premier danseur* that the existence of Eng. B. dancers became noticed, the most accomplished among them being Sokolova and Markova (Alice Marks). Another important figure in the development of B. in England is Ninette de Valois, the pupil of Cecchetti, who became a member of the Diaghilev B. in 1924, and afterwards founded her own school and staged Bs. at the Abbey Theatre, Dublin. Her group was the nucleus of the Camargo Society, from which sprang the Sadler's Wells company, the truly national ballet of England.

The lesson of the hist. of the B., says Mr. Arnold Haskell, is that 'if national movements are to succeed, the dancer must not neglect a wide general education, and this is also the lesson for the contemporary Russian B.' Another lesson

is that classicism exists through every change, through romanticism, cubism, surrealism, but that from time to time it needs a great mind to reassess it in terms of the present. Yet another lesson is that the B. has been built 'wholly on cultural creativeness, distinguished from real life by the phantasies of its creator. Hence a touch of realism proves fatal. Combined with music it has found its domain in this intangible kingdom. Bs. are dreams, sometimes light and poetical like *Les Sylphides*, sometimes tragic like *Petrushka*, sometimes nightmarish like *Le Sacre du Printemps*, but always dreams, never reality' (Prince Peter Lieven), and an attempt to introduce realism into a dream is to miss the whole conception and genius of a B. Commenting on the period 1915-30, Prince Lieven says: 'In this period I see occasionally highly successful productions. I see false steps, much wavering, much "searching," but I find no signs of the birth of a new art.'

See Prince Peter Lieven, *The Birth of Ballets-Russes* (trans. L. Zarine), 1936; Arnold L. Haskell, *Ballet Panorama*, 1938, and *The Making of a Dancer*, 1946.

Ball-flower, ornament in Eng. Gothic architecture, resembling a ball placed within a circular flower, sometimes with three, sometimes with four, petals. It is characteristic of the Decorated style of the fourteenth century. It is supposed by some to be an imitation of a pomegranate, and by others of a hawk's bill.

Ballia, tn. and dist. of the United Provs., India, on the Ganges, 70 m. E.N.E. of Benares. Noted for the bathing fair, held in Nov. Pop. about 19,000.

Ballin, Albert (1857-1918), Ger. ship-owner, of an old Jewish family in Hamburg. Joined his father's emigration business in 1874. Was agent for some Eng. shipping companies. Joined Hamburg-America line in 1886 and became director-general. He had gifts as a negotiator and worked for a political agreement between Germany and England. On the Ger. collapse in 1918 he committed suicide two days before the armistice of Nov. 11.

Ballin, Claude (1615-78), Fr. goldsmith, who copied the works of Poussin, and who was employed by Louis XIV. His nephew, Claude B. (c. 1660-1754) was also a noted goldsmith, his chief work being the coronation crown of Louis XV.

Ballina, seaport in cos. Mayo and Sligo, Eire, on both sides of the R. Moy, 7 m. from Killala Bay. The Sligo portion is properly called Ardarae, a suburb of B. The R. Moy and Lough Conn are favourite resorts of anglers, as there is excellent salmon fishing. Coarse linens are manufactured, and there is trade in all kinds of agric. produce. The Fr. took possession of the tn. in 1798, but shortly afterwards were defeated at Killala. There is a Rom. Catholic cathedral. Pop. 5000.

Ballinasloe, mrrkt. tn. in Connaught, on the borders of cos. Galway and Roscommon, Eire. It is situated on the Suck, a trib. of the Shannon, and is further connected with the Shannon by the Grand

Canal, opened for commercial purposes in 1828. There is a celebrated wool fair held on July 13, and a cattle fair in Oct. There are breweries and flour-mills, and tanning, hat-making, and carriage-building are among the other industries of the tn. Garbally Castle, in the neighbourhood, is the seat of the earl of Clancarty. Pop. 5000.

Ballinrobe, tn. in co. Mayo, Eire, on the Robe, near its mouth in Lough Mask, 27 m. N. of Galway. Pop. 2000.

Balliol College, college of Oxford Univ. Its foundation is attributed to Sir John de Balliol of Barnard Castle, Durham, and his wife, Devorguilla. John de Balliol was a keen supporter of Henry III. in his wars, but as an act of penance for the injuries done to sanctuaries in his neighbourhood, and to show his pious love of learning, he maintained 16 poor scholars of Oxford between 1262 and 1268. On his death Lady Devorguilla completed his project of founding a residence for these scholars in 1282, and other benefactors added gifts of money, land, and church livings. Part of the library dates from 1430, but many new buildings have been added during the last century in the Gothic style. The college is endowed with many scholarships and exhibitions, and consists of a master, 12 fellows, about 50 scholars and exhibitioners, and the undergraduates, on an average, number over 200. B. boasts of many brilliant scholars, and has been the home of the champions of many intellectual and social movements. Wycliff was its master about 1360, when scholastic philosophy was cultivated within its walls. In the fifteenth century it harboured many Eng. humanists, including Humphrey, duke of Gloucester (one of the founders of the Bodleian Library), and the earl of Worcester. In the nineteenth century it contributed Cardinal Manning to the Oxford Movement. Among its distinguished graduates are Dr. Adam Smith, Robert Southey, Matthew Arnold, Swinburne, Andrew Lang, Herbert Henry Asquith (Lord Oxford and Asquith), and Alfred Milner (Lord Milner).

Ballista, engine used by the Romans for propelling heavy missiles in siege operations. It was constructed on the same principle as the catapult, the difference being that the catapult was used for propelling arrows, stones, etc., in siege and field warfare, whilst the B. discharged heavy beams and large stones for the battering down of buildings, or, in other words, the distinct high-trajectory B. discharged heavier stones from the end of rotating arms. The motive power in both types of engine is supplied by tightly twisted hemp, sinews of animals, or raw hide. Two such skeins were firmly fixed vertically in a heavy wooden framework; two stiff wooden arms were inserted in the skeins and were attached to a bow-string which was drawn back by a winch and locked by a trigger mechanism. The projectile was propelled through a window in the vertical framework.

Ballistic Pendulum, see under PENDULUM.

Ballistics, the study of the motion of projectiles. It consists of two main branches, interior B. and exterior B. Interior B. deals with the motion of the projectile inside the bore of the gun, and is concerned with providing a theoretical basis for the methods and rates of burning of various kinds and shapes of propellants, the ultimate object being the determination of the maximum pressure set up by the gases inside the gun, and the velocity with which the projectile is ejected from the muzzle. The theory having been developed, the practical application is the fixing of the weight of the propellant, and the size and shape of its component pieces or grains, necessary to produce any desired velocity in a particular gun without subjecting it to a pressure greater than the material can stand. The consideration of the stresses in the material itself belongs to the province of gun construction and design. Exterior B. deals with the motion of the projectile outside the bore and its prin. problem is the calculation of the path of a given projectile once its muzzle velocity and the elevation at which it was fired are known. The solution of this problem enables the ballistcian to construct range-tables by means of which the gunner can lay his gun so as to hit a given target. In investigating the problem, measurements have to be made to ascertain the nature and amount of the air's resistance to the shell; how it is affected by the weight, shape, and steadiness in flight of the projectile; how it is affected by the atmospheric conditions of temp., air density, and humidity; and, finally, what amount of twist must be given to make the projectile come down nose first, and how this twist affects the flight of the projectile. These measurements are usually considered under the heading of experimental B., and the term exterior B. is properly applied to the calculation of trajectories once the necessary data regarding velocity, elevation, and air resistance are known.

Developments in anti-aircraft defence have led to increased interest and research in the production of accurately burning time fuses for projectiles. This section of B. belongs both to interior B. as regards the rate of burning of the powder of the fuse under various pressures, and exterior B. both as regards the variations in pressure occurring as the projectile travels along the trajectory and the time taken for it to reach various points on that trajectory.

Bomb-dropping from aeroplanes calls for a knowledge of exterior B., bomb sights being constructed from ballistic data obtained from experiments on the air's resistance to bombs of different shapes and sizes moving at various speeds.

Consult C. Cranz, *Handbook of Ballistics*, Eng. translation, 1921; F. R. Moulton, *New Methods in Exterior Ballistics*, Chicago, 1926.

Ballistite, smokeless explosive formed from gun-cotton. It is very similar in composition to cordite and the various blasting gelatins.

Balloch, vil., Dumbartonshire, Scotland, at the S. end of Loch Lomond. It is a terminus for the steamers on the loch.

Balloonist, see BAILLOU, GUILLAUME.

Balloons. The science of aerostation is not so old as that of the sister science, aviation, but the younger science more speedily reached any degree of success. During the thirteenth century we get many attempts, either theoretically or practically, to solve the problem of aerostation. The flying dove of Archytas, the experiments and theories of Roger Bacon and Albert of Saxony, have been dealt with elsewhere (see AERONAUTICS). Francis Lana failed to solve the problem, yet, at the same time, made great strides in the right direction; the science had also attracted the attention of Leonardo da Vinci. But it was not until the eighteenth century that the solution of the problem appeared to be in sight. Among those who had been attracted by the results of Cavendish's experiments were two brothers, Joseph and Etienne Montgolfier, the sons of a paper merchant of Annonay, in France. That they did not fully solve the problem, nor yet understand the full significance of the experiments of Cavendish, is now fairly obvious, and, furthermore, they thought that it was the smoke that caused the fire B. to ascend. But the development of the B. and the research which led to the practical perfection of the science of aerostation, date from the first experiments of these brothers with their fire-Bs., or Montgolfières, as they came to be called later.

The Fr. physicist Charles, however, who knew from his experiments with hydrogen the real cause of the ascent of the B., was entrusted with the work of making a hydrogen B. He realised the necessity for making the B. thoroughly air-tight, and so his B. was made of silk and coated with a rubber solution. The ascent was successfully made in Aug. 1783, amidst the plaudits of an enthusiastic Parisian crowd. The brothers Montgolfier in the meantime continued their experiments, and attained a certain degree of success, being enabled to send up a B. that contained a number of animals; they were given enthusiastic receptions throughout France, and received rewards at the hands of royalty. The next step in the evolution of the B. was the construction of a B. that would carry passengers. An ascent in a captive B. was made by one Pilâtre de Rozier in Oct. 1783, and the same aeronaut made an ascent in a free B. during the same year. In the following year an ascent was made by a certain Madame Thiblé, who has therefore the honour of having been not only the first lady aeronaut, but also one of the pioneers of the movement. But the many experiments which were made with Montgolfières showed that the B. of that type was not entirely practicable nor very serviceable. The B. was often burnt during the inflating process, sometimes they caught fire in the air. The type of B. used by the physicist Charles did not differ essentially from the modern type, and ultimately it was in

favour of this type that opinion veered. The hydrogen B. of Charles was fitted up with a net which covered about half the B. and was used to support the silk covering and also to distribute the pressure more evenly. From the wooden ring in which this silk netting ended, the car of the B. was attached by short ropes. From the experimental flights with Montgolfières and Robertières (sometimes called Charlières) much knowledge was gained, and during the next few years flights took place in a great many places. Flying from London in 1784, Lunardi made a successful descent in Hertfordshire, after having been in the air for a little over two hours. In the following year, in the face of much difficulty and in spite of considerable hardships, the first cross-Channel flight was made by Blanchard and Jeffries. Blanchard had previously made a number of successful flights, being one of the first professional balloonists.

The success of the B. was soon assured, and many ascents were made during the years following the first experiments of the Montgolfiers, and of Charles, Robert, and others. The problem which now immediately presented itself to the minds of those interested in ballooning was the construction of a B. which should not be at the mercy of the elements, and which the passengers should be able to direct. The early experiments for the production of a dirigible B. were failures; experiments were made with oars, with rudders, with sails, and by means of air-bags. In 1852 we get the first dirigible whose motive power was a steam engine which drove a propeller. This was built by Giffard. The weight of the dirigible, which was made with pointed ends, was roughly 1½ tons, and experiments with it showed that it was useless for its purpose. The experiments commenced by Giffard were continued in other countries, especially under Dupuy de Lôme (q.v.), and almost at the same time by Hænelin, who used for the first time a gas engine. The machine was an advance on the type of Giffard and Dupuy de Lôme, but on the whole was not a great success. The first real success of the dirigible type of B. was the successful flight of the airship *La France*, under the direction of two Fr. officers, Renard and Krebs. In Aug. 1884 they were able to prove conclusively that a dirigible airship could be produced, and could be manœuvred in the face of the wind, providing that the wind was not blowing at too great a velocity. Their first successful flight lasted for about 23 minutes, and they covered considerably more than 5 m. The successful flight of *La France* caused a renewal of experiments in most of the countries of Europe. In Germany a new dirigible was made by Dr. Wolfert, and its first ascent in 1897 ended in disaster. In 1898, however, the first experiments of Count Zeppelin met with considerable success.

Zeppelin's first dirigible was experimented with in 1900; it made three flights, and was finally abandoned. In 1906 Zeppelin made his second attempt, but

without meeting with great success. The machine was landed safely, but was damaged by the wind during the night so considerably that it had to be broken up. The Zeppelin III. was built soon after, and was most successful. It carried 11 passengers for a distance of about 69 m. In the following year (1908) appeared Zeppelin IV., which made a number of successful voyages, the crowning achievement being the journey from Friedrichshaven to Mainz and back, after which the airship was unfortunately destroyed by fire. In June 1909 the count also succeeded in travelling over 900 m. in 38 hours, and on his arrival in Berlin was greeted with enthusiasm by the populace.

Another great name in the annals of the dirigible B. is that of Santos Dumont, a young Brazilian, who built altogether 14 airships, and the results of these flights and the remedying of the failures went far to solve the question of aerial flight. The Lebaudy airship was a type that also proved successful, and was practically adopted as the type by the Fr. military authorities. The Lebaudy dirigible was the first example of the semi-rigid type which later proved successful. The first Lebaudy machine, after a series of successful trips, was wrecked in Nov. 1904; but so successful had the type of machine been that immediately the brothers Lebaudy built another on a large scale, which ultimately was adopted as the parent type of the dirigibles of the Fr. Army. The Fr. airship, the *Patrie*, was built after this model, and had a long and successful career before coming to an untimely end in the Atlantic. In Great Britain the first airship was of the non-rigid type, and was almost from the beginning antiquated and useless, but later on other airships of the semi-rigid type were built.

Military Ballooning. During the early period of the revolutionary wars two B. corps were organised by the Fr. Their success was not very great, but they were of some value during the battle of Fleurus, 1794, and annoyed the enemy to such an extent that, at least by the Austrians, balloonists were treated in the same manner as spies. But there were tremendous difficulties in the way of the B. corps, and in 1798, on his return from Egypt, Napoleon ended their existence. In the nineteenth century a great many attempts were made to revive the use of military Bs. The insurgents in Italy made use of them; during the Civil war in America use was made of them; and even in the wars of the republics of S. America Bs. were used at least for reconnoitring purposes. In most of the armies of the great powers experiments were made with Bs., and in France Napoleon III. tried to revive the B. corps, which had been done away with by his great predecessor. In Great Britain many military experiments were tried, but no attempt was made actually to form a B. corps until after 1870. Both the Fr. and Ger. military authorities tried to utilize Bs. during the Franco-Prussian war. The Ger. attempts were almost complete failures; the Fr.

attempts to use Bs. also to a large extent failed. So little information was gained that the military authorities ultimately sold their Bs. to the postal dept. On the other hand, passengers and letters were conveyed out of the besieged tn. of Paris in comparative safety by means of a B., and altogether, out of the 66 Bs. that left Paris during the period of the siege, at least 59 arrived quite safely at their destination. After the war of 1870-71, B. corps were formed in practically every army, and the experience gained during that war went far in helping in the organisation of the B. corps throughout the



Fox Photos

BARRAGE BALLOONS

world. One natural result of the war was the invention of a gun which could be used for firing at Bs., and this in turn led to experiments in the manner in which Bs. might best be disabled in time of war, and to what extent rifle and cannon fire would injure them. After the Franco-Prussian war the Fr. organised the B. corps so that to each army corps could be attached a B. corps which would be self-contained and self-reliant. To each corps were attached wagons for the carrying of tools and appliances and for carrying also the actual B., while further gas wagons were attached which would give the corps a constant supply. In Germany the first B. corps was formed in 1884. In Great Britain a B. corps was first founded in 1879, and during many of the wars which England fought after that period the B. corps did useful work. During the S. African war the B. corps rendered valuable services to the troops in the field,

and especially during the events which led to the surrender of Gen. Cronje. America also used Bs. in 1898, during her war with Spain, and B. corps were afterwards formed in Austria and Russia. The types of B. used may be divided into two classes—the free B., the captive B., and in this category, although not strictly a B., we may add the kite. Of these the captive B. was probably of most service, since by use of it observations could be made of the movements of the enemy, and the fire of the guns of the artillery could be directed from such a B. The spherical B. was practically doomed by the invention of the airship (*q.v.*), which at the outbreak of the First World War had assumed the well-known 'sausage' shape, i.e. it was cylindrical and had an inflated bag attached to the rear to act as a rudder. Such Bs. attached to warships proved invaluable to the Brit. in the Gallipoli campaign. For the use of Bs. in the Second World War as a defence against aircraft, see ANTI-AIRCRAFT DEFENCE.

The B. and Science. The use of the B. as a means of examining the phenomena of the atmosphere was first made soon after the earliest successful ascents had been made by the Montgolfiers and by Charles. Charles made scientific observations during his first voyages, but the first ascent made wholly in the interests of science was made by Jeffries in 1784. From his observations the B. rose to a height of 9000 ft., and the temp., which was about 50° F. in London, fell to 29° F. During the first half of the nineteenth century many ascents were made, but until the experiments of Glaisher began the results obtained were not of outstanding importance. The chief questions which Glaisher sought by experiment to determine were: the temp. of the atmosphere, the amount of moisture contained in it at the higher levels, the determination of the old point—the suitability of the higher levels for human habitation (this had reference principally to the mountains of India), the determination of the electrical properties of the atmosphere, the properties of the oxygen of the air at various levels, the constitution and the height of the clouds, the velocity and direction of the breezes; later special instruments were invented in order that the information gathered during these scientific ascents should be accurate, and much information was gained by the use of these instruments during the numerous ascents. The work has been confined chiefly to meteorology, but useful astronomical work has been done also. The phenomena attendant on the eclipse of the sun have been observed from a B., and interesting information concerning shooting stars has been gathered also. The experiments commenced by Glaisher were continued by distinguished scientists in almost every country in the world, and the information gathered was of vital importance to the science of meteorology. The B. has also been used for attempts to reach the N. Pole, the most famous of

which was the unfortunate attempt of Andr  e (q.v.); it was not till more than 30 years later that it was learned that his B. had remained in the air for 3 days and reached 84   N. Two voyages of over 1000 m. are on record, the first being that of Wise in 1859, from St. Louis to Henderson, New York, which covered a distance of 1120 m.; the other the voyage of the Count Henry de la Vaulx, who, starting from Paris, reached the tn. of Korostyshev in Russia, thus covering a distance of nearly 1200 m. Exploration of the stratosphere has been effected in recent years by Prof. Auguste Piccard, who was the first to use a specially sealed gondola; and, among others, by Cpts. Stevens and Anderson (U.S. Army Air Corps) who, in their balloon, *Explorer II.*, reached a height of 14 m. in 1935. See F. A. Magoun and E. Hodgins, *A History of Aircraft*, New York and London, 1931. See also AERONAUTICS; PARACHUTE.

Ballot (It. *ballotta*, diminutive of *balla*, a ball), originally the little ball used for secret voting; hence 'voting by ballot' is a term applied to the practice of secret voting. Secret voting was practised in Greece and Rome by means of balls, marked stones, shells, and tickets, in cases of ostracism, at criminal trials, and in Rome at the election of candidates to a public office. Secret voting at elections of members of Parliament was advocated by Eng. reformers in the early nineteenth century; it was included in the draft of the Reform Bill of 1832, a bill on the subject having been introduced by O'Connell in 1830. It was first used in 1870, in connection with the London School Board elections, and two years later, by Forster's Ballot Act, it was introduced into all parl. and municipal elections. The practice is now in force at elections in all countries where a constitutional gov. prevails.

Ballot, Paul Marie Victor (b. 1855), Fr. colonial administrator. He was appointed commander-in-chief of Senegal in 1878; of the settlements around the gulf of Benin, 1887; and organised the Fr. explorations of the interior of Africa as far as the Niger.

Ballou, Hosea (1771-1852), Amer. Universalist clergyman, was b. at Fitchmond, New Hampshire, son of Maturin B., a Baptist minister. In 1794 B. became a pastor at Dana, Massachusetts. From 1817 until his death he preached as pastor of the second Universalist church at Boston. Founder and editor of the *Universalist Magazine* (later called the *Trumpet*), the *Universalist Expositor*, and the *Universalist Quarterly Review*. His *Notes on the Parables* (1804), a treatise on the Atonement, estab. him as chief Amer. exponent of Universalism.

Ballou, Hosea (1796-1861), grand-nephew of the above, was b. in Halifax, Vermont, also a Universalist preacher, and associated with his uncle in editing the *Universalist Quarterly Review*. Advocated the establishment of the Universalist Denominational College of Tufts at Medford. He wrote *Ancient History of Universalism down to A.D. 553* (1829).

Ballou, Murray Maturin (1820-95), son of the first Hosea B., pioneer of Amer. illustrated journalism. Ed. *Gleason's Pictorial* and *Ballou's Monthly* and founded and ed. the *Boston Daily Globe*. Wrote a life of his father and a hist. of Cuba.

Ballston Spa, co. seat of Saratoga co., New York, U.S.A., 7 m. S. of Saratoga Springs; it is well known as a summer resort, having chalybeate and other springs. Pop. 5000.

Bally, Bengal, see BAIL.

Ballybunion, seaside vil. in Kerry, Eire, 9 m. N.W. of Listowel. It has a wireless station.

Ballycastle, seaport in the N. of co. Antrim, N. Ireland, opposite Rathlin Is. The castle was built by the earl of Antrim in the reign of James I. Pop. 1485.

Ballyclare, mrlt. tn., co. Antrim, N. Ireland, 9 m. E.N.E. of Antrim. It is noted for its paper mills. Pop. 2000.

Ballymena, tn. in co. Antrim, N. Ireland, on the Braid. It is a railway centre, on the Belfast to Londonderry line. The linen manufs. were introduced c. 1733, and are an important feature of the tn. The agric. and iron-mining industries are also carried on. The tn. was taken by the insurgents in 1798, but was not held for long. Pop. 12,000.

Ballymoney, tn. in co. Antrim, N. Ireland. Brewing, distilling, and tanning are carried on, and linen, soap, candles, and tobacco are manufactured. Pop. 3000.

Ballymote, tn. in the co. of Sligo, Ireland. It flourishes as a mrlt. tn., and has considerable agric. trade besides carriage works. In 1300 Richard de Burgh built a castle here the remains of which are still standing, and it was the scene of hostilities in 1641 and 1652. There are also the ruins of a Franciscan foundation which are assigned to the thirteenth century. The fame of its learning spread for some considerable distance at that time. The erudite monks left a literary monument in the form of the *Book of Ballymote*, a MS. now in the possession of the Royal Irish Academy. It is a miscellaneous collection of prose and verse, written in Gaelic, and compiled about 1301. There are some translations of Lat. romances, and the rest is of historical and genealogical interest. The book was once in the possession of the O'Connell family, who bought it for 140 cows. A facsimile reprint was issued in 1887, ed. by Prof. Atkinson. Pop. 930.

Ballyshannon, seaport of Donegal co., Eire, at the mouth of the Erne. Salmon fishing is extensively carried on at a waterfall in the Erne, where the salmon-leap and mounting ladders facilitate capture. Owing to a bar, the harbour is only available for small craft. Remains exist of a castle of the O'Donnells, where the Eng. in 1597 were defeated. Pop. 2170.

Balm (*Melissa officinalis*), species of Labiate found in Europe and W. Asia, and frequently cultivated in Eng. and Amer. gardens. It has an upright stem, opposite and alternate leaves, which are

toothed and ovate, and the ordinary dead-nettle-shaped flowers of the order, faint yellow or a white colour. The leaves are used in medicine for their tonic and stimulant properties. Bastard B. (*Melittis melissophyllum*) is the only species of its genus, and is found in S. Europe; it also belongs to the Labiatae.



BALM

Balm of Gilead, or **Balsam**, oleo-resin produced from the *Balsamodendron opobalsamum* and used in oriental countries for its sweet scent and medicinal properties. It is referred to in the O.T. and by many anc. writers, who affirm its power to heal. See **BALSAMODENDRON**.

Balmaceda, José Manuel (1838-91), Chilean politician, b. and d. at Santiago. As a politician he joined the Liberal party and later became president of the republic of Chile. He did much work for the development of public instruction and for the army and navy. He also promoted the construction of railways.

Balmain, shipbuilding suburb of Sydney, New S. Wales; pop. 32,000.

Balme, Col de, mt. pass situated between Mts. Blanc and Dent du Midi. It is traversed by the road from Martigny to Chamonix. Its highest point is 7200 ft. above sea-level.

Balmerino, James Elphinstone, first Baron (1553-1612), Scottish politician. Under James VI. he was appointed judge and royal secretary. He was made Lord B. in 1604. He was responsible for a letter addressed to the pope, without the king's knowledge. The letter was pronounced a forgery, and B. was imprisoned.

Balmés, or **Balmes**, **Jaime Luciano** (1810-48), Sp. publicist and philosophical writer, was b. at Vich in Catalonia. He founded a political paper of a clerical and monarchical character in Madrid in 1844, calling it *El Pensamiento de la Nación*. His *Filosofía fundamental* (1848) has been trans. into Eng.

Balmont, Constantin (b. 1867), Russian poet. His significance in Russian literature is that he regenerated the methods

of Russian poetry, giving to it technical methods of a variety hitherto unemployed in the language. Thus he introduced inferior rhymes and assonance. A prolific writer, he pub. regularly in Russia up to the time of the revolution, when he emigrated to Paris. He contributed largely to Russian periodicals pub. in France.

Balmoral Castle, residence of the Brit. sovereign in Aberdeenshire, Scotland. It is situated on the r. b. of the Dee, which at this point is crossed by a suspension bridge. The prince consort acquired it from Sir Robert Gordon and gave it to Queen Victoria, together with the estate attached. It is built in granite and has an E. tower 100 ft. high, which commands a magnificent view.

Balnaves, Henry (d. 1579), of Halhill, Scottish reformer, b. of poor parents at Kirkcaldy. Fife, and studied at St. Andrews Univ. and at a free school at Cologne. He acted for some time as a procurator in the courts of St. Andrews and then removed to Edinburgh, where in 1538 James V. made him a lord of session. On the accession of Mary (1543) B. was promoted to the office of secretary of state, and was instrumental in getting the Holy Scriptures trans. into the Scots vulgar tongue. He was confined for six months in the castle at Blackness for his aggressive Protestantism. In 1546 he joined the murderers of Cardinal Beaton in the castle of St. Andrews. In the following year he was captured by the Fr. and was thrust into the castle of Rouen as a prisoner of war. In 1554, when the dowager queen, Mary of Guise, became regent of Scotland, B. was released and his forfeiture rescinded. On his return to Scotland he took an active part on the side of the lords of the congregation, and in 1563 was appointed a lord of session and was chosen as one of the commissioners to revise the *Book of Discipline*. During his imprisonment he wrote a treatise on justification, which was pub., with a preface by Knox, under the title of *A Confession of Faith*.

Balneology and **Balneotherapeutics**, science of baths and their effects upon the system. Baths act more by modifying temp. than by skin absorption. The *cold bath* (45-66° F.) causes a contraction of the vessels of the skin and consequently drives the blood into the internal organs, where the resulting dilatation causes an exhilarating after-effect if the immersion be of short duration. The cold bath is thus valuable as a tonic. The *tepid bath* (85-90°) is of value in fevers through actual heat abstraction. Between 93° and 95° baths are at the point of thermal indifference; they do not change the movement of the bloodstream and have a sedative effect on the nervous system. Baths of higher temps. promote circulation in the surface blood-vessels, and the *hot bath* (103-108°) operates as a powerful stimulant, and is used in dropsies, catarrh, kidney disease, etc., to increase the absorption of morbid products. If the immersion be prolonged, there may be weakness of the

heart, with the possibility of fainting. The *Turkish bath* is a hot-air bath where the patient passes through compartments ranging in temp. from 100° to 200°. It is used for promoting perspiration, and in cases of catarrh, neuralgia, and rheumatism. It is deleterious in fatty degeneration of the heart. The *Russian bath* is a vapour-bath in which steam is generated by throwing water on heated mineral or metallic surfaces; it is of value in rheumatism. The *douche* is a bath where water is forced by considerable pressure upon the surface of the body; it is used in insomnia and the coma of alcohol or sunstroke. The *shower-bath* is a douche where water is forced against the body from a nozzle with numerous perforations; it is used as a general tonic.

There are also special forms of bath where the body is immersed in peat, mud, slime, pine-leaves, herbs, brine, sand, bran, malt, tan, glue, milk, soap, acid, mustard, etc. Air-baths are dealt with under AEROTHERAPEUTICS, and electric baths under ELECTROTHERAPY.

Balneotherapeutics is a term generally restricted in application to treatment at spas, where patients systematically drink and bathe in water naturally mineralised, or artificially modified at the places where the springs emerge from the earth. The beneficial results of spa treatment in many types of diseases are undeniable, but there is some difficulty in apportioning the credit among the various curative factors in such treatment. The usually favourable climate, the submission of the patient to a regime that would probably be relaxed at home, the presence of physicians with special experience, the provision of specially appropriate appliances and organisation, and the combination of regular exercise in a good atmosphere with systematic medical treatment, all contribute in varying measures to the well-being of the patient. As to the waters themselves, it is undoubtedly true that many of them lose their properties when bottled and exported, and cannot be artificially prepared so as to produce the same conditions, or contain such subtle ingredients that their composition is not wholly known. It has been suggested that the warm mineral springs consist of water which is formed by the combination of hydrogen distilled from granite rocks at great depths with oxygen derived from metallic oxides also found there, thus producing what is called nascent or virgin water. Many waters also contain radium emanation, which has a therapeutic value in certain morbid conditions. The bubbles of carbonic acid gas, which have such an exhilarating effect on the skin, cannot be exactly reproduced in baths artificially charged with carbonic acid.

Spa treatment is suitable in the sub-acute or chronic stage of disease, where the patient has a good supply of reserve force. Acute cases, or those tending to a fatal issue at an early period, should not be recommended; serious visceral disease, advanced arterio-sclerosis, serious mental or nervous depression are also unsuitable,

whilst children and old people should have recourse to climatic influences only. In any case, the patient should be reconciled to separation from all business and domestic entanglements which are liable to occasion worry.

The chief object of spa treatment is to promote excretion by way of the kidneys, bowels, and skin. For elimination by the kidneys the alkaline waters at Vichy, Bad Neuenahr, Vittel, Contrexéville, Wildungen, Evian-les-Bains, and Aix-les-Bains are suitable. For elimination by the bowels the waters containing sodium sulphate are useful, as at Marienbad, Karlovy Vary (Karlbad), Brides-les-Bains, and Cheltenham. Arthritic ailments are best suited by Aachen, Aix-les-Bains, Bath, Droitwich, Harrogate, and Buxton. Nervous diseases are specially provided for at Oeynhausen, Schlangenbad, and Church Stretton. Colitis is a leading speciality at Plombières and Châtel-Guyon. Primary anæmias are treated at Schwalbach, Spa, and St. Moritz, whilst for secondary anæmias Royat, La Bourboule, Uriage, Harrogate, and Llandrindod are suitable. Marienbad is specially recommended for the systematic treatment of obesity. Diabetic patients will secure experienced treatment at Karlbad, Brides-les-Bains, Neuenahr, Vichy, Vittel, Royat, Buxton, Gastein, Evian-les-Bains, St. Moritz, and other spas. Phlebitis and varicose veins are specialised in at Bagnols-de-l'Orne. Luchon and Schinznach have a good reputation for the cure of skin diseases, and Cauterets attracts sufferers from throat maladies. Famous Amer. watering-places are Hot Springs, Arkansas; French Lick Springs, and W. Baden, Indiana; White Sulphur Springs, W. Virginia; and Saratoga Springs, New York. See A. G. Gordon and F. G. Thomson, *The Physiology of Hydrology*, 1930.

Balquhider, vil. of Perthshire, Scotland, at the head of Loch Vail and below the braes of B. It is celebrated in the list. of Itoab Roy.

Balrampur, tn. in United Provs., India, near the R. Rapti. Its rajah was loyal during the Mutiny. Pop. 17,000.

Balsa, a raft or fishing boat, used by Indians on the Pacific coast of S. America. It is constructed usually of floats made of logs of the B. tree. B. wood is a light useful timber now used in the construction of aircraft.

Balsam (Gk. *βάλσαμον*, balsam-tree), name given in medicine to many resins and oils taken from plants of different kinds, but given in particular to B. of Peru and of Tolu. These two varieties come from leguminous plants, the first species being known as *Myroxylon peruvianum*, the second as *M. toluiferum*. Liquidambar, a balsamic product of *Liquidambar styraciflua*, is sometimes called white B. of Peru. B. of Copaiba is also obtained from many varieties of the genus *Copaifera*. Bs. have a pleasant fragrance which renders them of service in making confectionery and perfumes; they also have tonic properties.

Balsam (*Impatiens*), genus of Balsaminaceæ which is native to India and Japan. The plants are generally herbaceous annuals with white or red flowers. *I. balsamina*, found in the E. Indies, is a beautiful plant cultivated in gardens and conservatories in England; *I. noli-melangere*, yellow B. or touch-me-not, is found in Europe, and often in Britain.



BALSAM

If the ripe capsule of the flower be touched it immediately dehisces and scatters its seed.

Balsamina, another name of the genus *Impatiens* which belongs to the order Balsaminaceæ. The former is a name given by Tournefort, the latter by Linnæus.

Balsaminaceæ is an order of Dicotyledonous which contains only two genera, of which *Impatiens* is the chief. It has numerous species of herbs which are cosmopolitan and are remarkable for the elastic force with which the valves of the capsular fruit contract and eject the seeds. The flowers are regular zygomorphic, have 5 petaloid sepals, 5 petals, 5 stamens, and 5 carpels which are united, superior, and contain numerous ovules.

Balsamo, Giuseppe, see CAGLIOSTRO.

Balsamodendron, or Commiphora, genus of Burseraceæ which grow in tropical Asia and Africa. *B.* (or *C.*) *myrrha* yields myrrh, which exudes as a resin from the bark and becomes hard by exposure to the air; it has a bitter taste and peculiar odour, and is used in the manuf. of incense and some medicines. *B.* (or *C.*) *opobalsamum* produces balm of Gilead (*q.v.*).

Balsam, Hugh de (*d.* 1286), succeeded William de Kilkeny as bishop of Ely, 1256. In 1280 he obtained a charter to introduce 'studious scholars' into his hospital of St. John, Cambridge, in place of the secular brethren. In 1284 he founded Peterhouse, Cambridge, for his own pupils.

Balta, tn. in Podolia, Ukraine. It is situated between the Dniester and the Bug. It has a trade in cattle, horses, and

grain. Two fairs are, or were, held there annually. Among its industries are tallow-melting, soap-boiling, tile-making, and brewing. A large part of the pop. are Jews; pop. 22,590. Also the name of one of the Shetland Is.

Baltadjî, Mohammed (*d.* 1712), Turkish statesman, became grand vizier under Ahmed III. In 1710 he gained a decisive victory over the Russians, but was induced by the Empress Catherine to sign the treaty of Falezî renouncing his advantages in the battle. This alienated Charles XII. of Sweden who had aided him. His death took place at Lemnos.

Baltard, Louis Pierre (1764-1846), Fr. architect, engraver, painter, and author. He at first became an engraver, then went to Italy, where he served as an architect, but owing to the revolution he returned to Paris and entered the army. He afterwards became prof. of architecture at the Polytechnic, and built the chapels of Sainte-Pélagie and Saint-Lazare, and the court of justice at Lyons. His engravings were very numerous.

Baltard, Victor (1805-74), Fr. architect, son of Louis Pierre. As director of architectural works at Paris and La Seine he built sev. public buildings, and he also restored the churches of Saint-Germain-des-Prés, Saint-Eustache, Saint-Severin, and Saint-Etienne-du-Mont. Of his publications, illustrated with his own designs, the chief are: *Monographie de la villa Médicis à Rome*, 1847; *Monographie des Halles centrales*; and *Les Peintures et arabesques de l'ancienne galerie de Diane à Fontainebleau*.

Baltasarinî (*f.* sixteenth century). It, musician, first violinist of his time and founder of the modern ballet. His real name was Baldassaro de Belgoloso; he went to France and became first *valet-de-chambre* to Catherine de' Medici (1555) and led his royal mistress's string band—gallicising his name to Balthazard de Beaujoyeux. Introduced it. dances to Paris. *D. c.* 1587.

Balthazar, or Balthasar, the Gk. form of the name Belshazzar (*q.v.*).

Baltic, The (Baltic Mercantile and Shipping Exchange), situated in St. Mary Axe, London, E.C., where merchants dealing in grain transact both buying and selling. It is the outgrowth of merchants meeting in the B. Coffee House, once situated in Threadneedle Street, for the transaction of business. Its dealings are not, as the name would appear to indicate, limited to the products of the B.

Baltic, Battle of the, sea-fight which took place off Copenhagen on Apr. 2, 1801. In this battle Sir Hyde Parker and Nelson destroyed the Dan. fleet.

Baltic Port, or Baltiski, port of Estonia, on the gulf of Finland, about 30 m. W. of Tallinn, with which it is connected by rail. Exports timber. Pop. 2000.

Baltic Provinces, region lying on the gulf of Finland and the B. Sea, including the three former Russian govts. of Courland, Livonia, and Estonia, later the independent states of Estonia, Latvia, and Lithuania. The term was generally used to include also St. Petersburg (now

Leningrad) and Finland. The bulk of the pop. consists of Lettish and Estonian races, the latter being a branch of the Finns, while there is a considerable admixture of Gers., especially in the large tns. and among the higher classes. The number of Russians is still fairly small. Excepting Courland, which was a dependency of Poland, all the B. P. once belonged to Sweden. The foundation of St. Petersburg in 1703 first gave Russia a secure footing on the B., and the Swedish provs. were ceded to her soon after. Courland did not come into her possession until 1795. Strenuous attempts were made to Russianise the B. P., and to convert their inhab. to the Russian Church, but were not very successful.

In the first year of the First World War Lithuania was occupied by the Gers. The Ger. policy was to make Lithuania a subordinate buffer state against Russia and Poland. Lithuania, therefore, began her career towards autonomy under Ger. influence. In 1915 the Gers. occupied Courland, S. of Latvia, and in 1917 they also held Riga and Livonia. Latvia had been drained of resources and man-power by the retreating Russians, but the Ger. policy was to make Latvia, not a separate state like Lithuania, but a part of Prussia. The end of the war put an end to this scheme, but a Ger. army of occupation still remained in Latvia under Gen. von der Goltz, and this, at the instigation of the Ger. landowners, the Balt barons, was used to fight the Bolsheviks. In Feb. 1918 the Gers. had also occupied Estonia, but on their departure in Nov. the country was invaded by the Bolsheviks, who were not expelled until Feb. 1919. In the same year Estonia was invaded by von der Goltz, until the Allies ordered the Ger. Army to evacuate. Meanwhile Estonia was the base of a counter-revolutionary 'white' army under Yudenitch. He was defeated, however, and peace being concluded the Bolshevik Gov. recognised the independence of Estonia. In the same year (1920) they recognised the independence of Latvia and Finland. At the Peace Conference (1919) Latvia, Estonia, and Lithuania pressed for recognition as sovereign states, granted only in 1921, while Lithuania did not obtain full recognition until 1923, after sundry attempts at a union with Poland had failed.

Between the two world wars the B. P. or states existed as buffer states between Soviet Russia and the W. Russian aspirations for the re-acquisition of these countries, or part of them, were only temporarily abandoned after 1918. Russia was, by long tradition, desirous of obtaining ice-free ports, together with control of the B. In Sept.-Oct. 1939 Stalin took advantage of the war situation to compel Lithuania, Latvia, and Estonia to agree to the establishment of Russian naval bases and garrisons on their ters. Ger. influence in this region was ousted by the Soviet and Ger. minorities were transferred to Germany. In Dec. 1939-Mar. 1940 Finland was forced, after a short war, to surrender vital strategic

areas to Soviet Russia (see FINLAND: *History*). In June-July 1940 Lithuania, Latvia, and Estonia were completely occupied by Russian troops; puppet pro-Russian govts. were set up, and in Aug. 1940 all three states were incorporated in the U.S.S.R. as federal republics. They were, however, overrun by Ger. forces in the following year and remained in Ger. occupation until 1944. In that year, in Sept., there was a major Russian advance E. and S. of Riga; on Oct. 10 the Russians reached the B. coast in Latvia. Riga fell on Oct. 13. Previously, in June, the Russians had broken through the Mannerheim line in the Karolian Isthmus, and on Oct. 25 they crossed the Norwegian frontier in Finland and took Kirkenes. See further under EASTERN FRONT OR RUSSO-GERMAN CAMPAIGNS, in SECOND WORLD WAR. The Soviet system, which is absorbing these small countries, may leave some opportunity for the retention of their languages and artistic achievements, but may not admit of survival of their highly democratic social-economic systems.

See articles dealing with the separate B. states; also A. MacC. Scott, *Beyond the Baltic*, 1925; O. Rutter, *The New Baltic States and their Future*, 1925; E. W. P. Newman, *Britain and the Baltic*, 1930; F. W. Pick, *The Baltic States*, 1945; and B. Newman, *Baltic Background*, 1948.

Baltic Sea, sea between 54° and 66° N. lat. and 9° and 30° E. long. It is surrounded by the dominions of Sweden, Russia, Germany, and Denmark. It is 960 m. long and 400 m. broad. It has 5000 m. of coast-line. A channel connects it to the North Sea. The W. portion of this channel is called the Skager Rack, while the remainder is called the Cattegat. It fills the S. extremity of the Cattegat, and communication is continued by narrow straits called the Sound, the Great Belt, and Little Belt. Its total area is 166,397 sq. m. The separating factor between the B. and the North Sea is a plateau upon which the is. Zealand, Fünen, and Laaland are situated. Its depth has been computed to be 36 ft., which falls considerably lower than that of any other inlet of the sea of similar character. The bed of the B. S. in the deeper parts is generally of soft brown or grey mud, or else of hard clay. Near the low coasts and on the shallower banks fine sand with small pebbles are seen.

Its navigation is rendered dangerous by shallowness, narrowness, and sudden changes of wind followed quickly by storms. It runs eastward into three gulfs, gulf of Bothnia, the northernmost, gulf of Finland, and gulf of Riga. There is not such a quantity of salt in the B. as in other oceans, and the water therefore is clearer on that account. From three to five months of the year access through the sea is hindered by ice, but the whole surface is seldom frozen entirely, though records of that event have been estab. in the years 1658 and 1809. It possesses the characteristic of all inland seas that it is little affected by tides. The perceptible rise and fall of its waters are due more

to the variations in the water-bulk of its rivers than to any tidal circumstances. Of the rivers that discharge their waters into this sea there are 250, resulting in a drainage of almost one-fifth of the area of Europe. The most important of these are the Oder, Vistula, Niemen, Dvina, Narva, Neva, while the chief of the is. are Zealand, Fünen, Bornholm, Stamsöe, and Læland (Denmark); Gottland, Öland, and Hveen (Sweden); the Åland Is. (Finland), and Rügen (Germany). The principal exports from its bordering countries are timber, furs, tallow, and grain. Amber is cast upon its shores in stormy weather. The canals connecting the B. S. with the North Sea are the Kiel, which cost £8,000,000, and which proved an immense advantage to Germany; the Elbe Canal, and the Gotha Canal. The chief harbours in the B. are Copenhagen (Denmark); Kiel, Lübeck, Stralsund (Germany); Szczecin (Stettin) and Gdansk (Danzig) (Poland); Kallningrad (Königsberg) and Klaipeda (Memel) (Lithuania); Riga (Latvia); Narva (Estonia); Kronstadt (R.S.F.S.R.); Sveaborg (Finland); and Stockholm and Karlskrona (Sweden).

Baltimore: 1. Port and the largest city of Maryland, U.S.A. It is, as regards pop., the eighth largest city of the U.S.A., and is situated on the N. bank of the R. Patuxent, an inlet from Chesapeake Bay. It is 250 m. distant from the ocean by canal. Its environment is pleasing, and its site is of varied altitudes. It owes a great deal of its importance to its safe harbour, whose minimum depth is 24 ft., and it has direct communication with the principal ports on both sides of the Atlantic. Over 100 steamship lines enter the port, which is one of the best on the Atlantic coast. Many railways converge at B. and a great trade in bread-stuffs is carried on, while among further articles of export are tobacco, provisions, coal, cotton, naval stores, canned fruit, and oysters. The chief articles imported are guano, coffee, other tropical products, fertilisers, iron, steel, tin-plate, and chemicals. Besides its great shipping trade, B. has extensive manufactures, which include smelting and refining copper, motor vehicles, tin cans, and other tin-ware, refining sugar and petroleum, slaughtering and meat-packing, printing and publishing, and the making of clothing and tin-ware. The canning of oysters forms one of the chief industries of B., and many thousands of vessels are engaged in their quest. The splendid appearance of many of its buildings has made additional fame for the town, among which buildings the most notable are the chamber of commerce, the Roman Catholic cathedral, the custom-house, the Maryland Institute, and the Peabody Institute. In Feb. 1904 the greater part of the business quarter was destroyed by fire. In 1920 the city area was nearly trebled by the inclusion of the adjacent districts, and its water-front was much enlarged.

There are five noteworthy public monuments, the chief being that of Washington, a column 210 ft. high. The fineness of these erections has caused B. to be

called the monumental city. The most famous of its many beautiful parks is the Druid's Hill Park of nearly 700 ac. in extent. Since the first decade of the present century great improvements have been carried out in B.; cobbled streets have been converted into smooth-paved ones, and new water and sewage systems have been installed. There are approximately 200 churches, conspicuous among which are the Roman Catholic, Protestant Episcopal, and Methodist. One of the first seats of learning in the country is the Johns Hopkins Univ. (q.v.). It was opened in 1876. Other educational centres are the B. city college, the academy of science, the law school, St. Mary's Univ., and Loyola College. The Enoch Pratt library contains over 350,000 books. In addition to its main building, it has 26 branches. As a social centre and a town famous for its enthusiasm for art, B. is specially to be noted. It is the see of an Anglican bishop and a Roman Catholic archbishop, who acts as primate of U.S.A. Dr. John Carroll was the first archbishop. The pop. includes a large element of German descent, with Irish and French creole families. Negroes number over 100,000. In the days when B. was a colony, the Puritans and Scottish-Irish Presbyterians were in great numbers. The city was founded in 1729 in honour of Lord B., who established Maryland colony. During the wars of 1812-15 it became the scene of many engagements. Pop. (1940) 1,046,700.

2. A fishing vill. in Co. Cork, Eire, on B. Bay, 8 m. from Skibbereen.

Baltimore Bird, or Oriole (*Icterus baltimore*). It is very common all over N. America, and is something like a finch, measuring about 7 in. from the tip of its long, sharp beak to the end of its rounded tail. The beak is conical and longer than the head, and the wings long and pointed. The males come N. early in May, preceding the females by a few days. They choose a spot preferably near houses, and build a beautiful hanging nest, from 6 to 7 in. long, in a tulip-tree or pea-vine, taking their materials from moss patches, cattle hairs, or fibres. Their plumage, especially of the males, is very gay, glossy black, orange, and vermilion. Orange and vermilion were the colours of the livery of Lord B., whence the name. It is also called fire-bird from its bright plumage, and hang-nest from its method of building. The B. B. has a strong and sweet song particularly pleasing during its mating season, and is gregarious in its habits. Although it does much damage among the fruit, it ridges the orchards of such insects as the canker-worm and tent-caterpillar. See Baird, Brewer, and Ridgway, *N. American Birds*.

Baltimore, George Calvert, first Baron (1580-1632), Eng. politician. He was a native of Yorkshire, and was educated at Trinity College, Oxford. He became secretary to Robert Cecil, afterwards earl of Salisbury. He helped James I. in a discourse against Vorstius, an Arminian theologian. In parliament he was regarded with suspicion, and his unpopularity was increased by his support of a

Sp. marriage. In 1625 he threw up office and acquired his title with large estates in Ireland. His name is generally connected with the growth of our colonial empire. He estab. a settlement at Newfoundland in 1621, and attempted a similar settlement in Virginia, but his refusal to sign oaths of allegiance prevented the execution of his project. He wrote *An Answer to Tom T'ell-Troth*, and many of his letters are found in the *Clarendon State Papers*.

Baltinglass, mkt. tn., 30 m. W. by S. from Wicklow, Eire. Pop. 2000.

Baltiski, see BALTIO PORT.

Baltistan, otherwise Little Tibet, mountainous region below the Karakoram Mts. and the Himalayas. Its mean elevation is 11,000 ft. The Upper Indus flows through the region, which is a mass of lofty mts. and contains the largest glacier in the world out of the Arctic regions. The inhab., numbering 52,000, are of Tibetan origin and Shilte Muslims in religion. B. with Ladakh form a prov. of Kashmir. See also BULTI.

Baltjik, Bulgarian seaport on the Black Sea, situated 20 m. N.E. of Varna. The ruins of Tomi, the scene of Ovid's exile, are near it. Pop. 6500.

Baltai, see BIELTZI.

Ba-luba, large negroid tribe of the Belgian Congo, living between the Kassai and Lubilash Rs.

Baluchistan (Beluchistan), country in S. Asia. Its boundaries are: on the N., Afghanistan; on the E., Sind; on the S., the Arabian Sea; and on the W., Kerman, a prov. of Persia. It has a coast-line of 500 m. The anct. dominion of Padrosia bears a certain relation to the present B., whose extent does not equal exactly that of the preceding kingdom, which extended to the Indus. Much of the country is still unknown save to a number of explorers. It was formerly part of Persia, and was later divided into the prov. of B. under Brit. rule and the agency states of Kalát (or Kelát), and Las Bela. Brit. B. was acquired partly from Afghanistan by the treaty of Gandamak, 1879, and partly from the khan of Kalát by arrangement, and comprised the dists. of Sibi, Quetta, Pishin, Thal-Chotiali, Nushki, Zhob, Chagai, Nasirabad, and the Bolan. The Afghan-Baluch frontier was demarcated in 1896-7. The total area of B. is approximately 134,638 sq. m. with a pop. (1941) of 920,943, divided as follows: Brit. B., 54,228 sq. m., pop. 501,631; Kalát, 73,278 sq. m., pop. 356,204; Las Bela, 7132 sq. m., pop. 63,008. In Aug. 1947 Brit. B. was assigned to the new independent state of Pakistan as well as the former agency states. The surface is mountainous, particularly in the N. region of the former Brit. B., which consists mainly of valleys and mt. ridges, the valleys themselves being a mile above sea level. Here there is an elevation of 12,000 ft., formed by the spurs of the Suliman Mts. In the S. the direction of the mt. systems runs from E. to W., while northwards the mts. are stretched across from N. to S. The chief routes are the valleys formed

by the parallel mt. chains of the S., the main thoroughfares being those to Quetta and Kalát through the Bolan and Mula passes respectively. The N.W. railway of India traverses the Bolan Pass—a great engineering feat—and serves Jhatpat, Sibi, Harnai, Quetta, Bostán, and Chaman. A line also runs to Nushki, an extension running thence to Duzdap on the Persian border. There is also a short narrow-gauge line from Bostán junction, 21 m. N. of Quetta on the Chaman line, to Fort Sandeman; this line passes through Hindubagh and was constructed during the First World War, to render more accessible the Hindubagh chromite deposits, which were needed for munitions. Altogether there are about 1020 m. of railway in the country. There is a complete postal service in Brit. B. and the administered terr., and a network of telegraph lines covers the N.E. dists., extending to Kalát and Killa Robat, and connecting with the Indo-European system. Some of the valleys are as high as 5700 ft. at their bottom, and Kalát, on the slope of one of these, is itself 6783 ft. high. Large tracts of the country are formed of impassable deserts, subject to fierce sandstorms in summer and equally formidable cold winds in winter. The rivs. are dependent upon the heavy rains, and when these fall are soon exhausted. This desolate character is chiefly true of the W. region. The temp. varies between suddenly changing extremes. In March the thermometer has actually registered 125° F. at Kalát, in spite of excessive cold in the previous month that has fallen many degrees below zero. Necessarily, therefore, pasturage is very scarce, and cattle are consequently few in number. Sheep and goats are numerous, however. The nature of most of the soil makes the camel the most useful beast of burden, while in the N.W. horses bearing traces of Arab pedigree are reared.

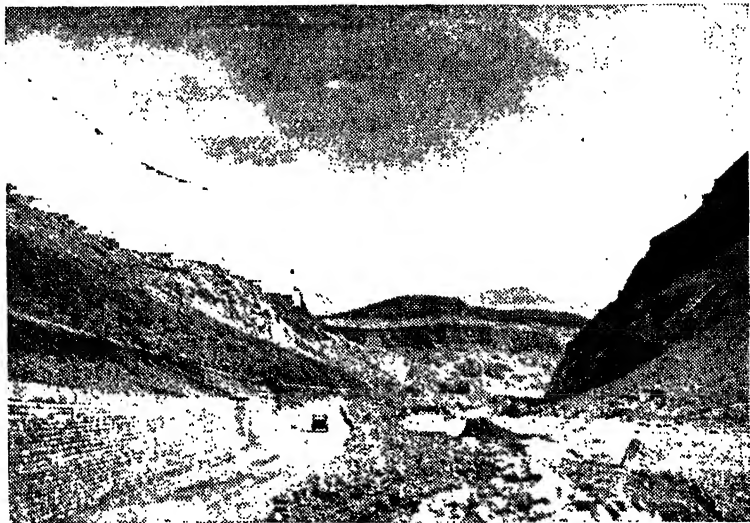
Among the wild animals are the tiger, leopard, wolf, hyena, apo, while fish are caught in large numbers off the coasts. Those regions that enjoy sufficient rainfall are fairly productive. The plain of Kachhi, in Kalát, is, indeed, very fertile, three crops being harvested annually; among the crops being rice, wheat, barley, millet, lucerne, potatoes, and maize. An area of 1750 sq. m. is classified as 'reserved forests,' i.e. forests intended to be permanently maintained by the provincial forest depts. for timber, or for protecting the water supply. There are also nearly 500 sq. m. of unclassified forest land. Fruits are many, and large quantities of grapes, melons, peaches, apricots, and apples are produced; the Makran dist., a sun-scorched, desolate region in the S.W., specialises in date growing.

Of the mineral wealth of B., there are deposits of gold, silver, lead, antimony, iron, copper, sulphur, alum, and sal-ammoniac. In 1887 a petroleum well was discovered in the N.

Kalát is the chief native tn. and cap. of Kalát state. The khan of Kalát, the head of a loose confederacy, formerly received

about £10,000 a year for quit-rents and subsidy from the Indian Gov. Some roadsteads are found on the sandy parts of the coast, among them being Soumlani Bay, Homara, and Gwadar. The roads in Kalât have been greatly improved and extended in recent years; journeys from the cap. to outlying dists., which used to occupy many weeks, can now be taken in as many days. The state boasts over 13,000 m. of good motor roads. The natives are formed of Brahui and Baluchis, the former being the dominant race, while Pathans inhabit the Brit. B. and

and Loralai, and there was also a police force. Early in 1918 there was serious unrest among the unruly Marri and Khetran tribes in the N.; the fort of Gumbaz was attacked in mid-Feb., and, later, gov. buildings at Kohlu were burnt, and Barkhan and Fort Munro were sacked. A punitive expedition marched into Khetran and took Kahan, the Marri cap., the rebels thereupon submitting unconditionally. During the Afghan war the Pathan tribes gave considerable trouble, but though disaffection smouldered for some time in the fastnesses of



BALUCHISTAN: THE BOLAN PASS

E.N.A.

the Agency ters. Much of the pop. is nomadic, or semi-nomadic. The inhab. are by religion mostly Mohammedan of the Sunni sect, and Hindus. Pushtu is the chief language.

The right of Britain to occupy Quetta was secured in 1877 and it, with Bolan, was leased in perpetuity in 1883. The Brit. and Agency ters. were administered by a chief commissioner and agent of the governor-general of India, headquarters being at Quetta, which is the only municipality. After the destruction by earthquake of the greater part of Quetta in May 1935, the offices of the administration and the military forces were moved to other parts of B. and to Sind pending the reconstruction of the tn. The military cantonment and administrative offices were rebuilt on rock foundations to the N.E. of the former site. (See also QUETTA.) Troops were stationed at Fort Sandeman, Chaman,

the Waziristan border, elsewhere it was soon quelled. See H. W. Bellew, *From the Indus to the Tigris*, 1874; E. A. Floyer, *Unexplored Baluchistan*, 1882; D. Bray, *Ethnographic Survey of Baluchistan*, 1913. Later works: A. L. P. Tucker, *Sir Robert Sandeman, K.C.S.: Peaceful Conqueror of Baluchistan*, 1921; Sir M. Aurel Stein, *Archæological Tour in Waziristan and Northern Baluchistan*, 1929.

Balue, Jean de la (1421-91). Fr. cardinal and minister of Louis XI. He was first introduced to Louis by Charles de Melun, and he became chaplain to the king, comptroller of finances, secretary of state, bishop of Evreux, 1464; bishop of Angers, 1467; and cardinal 1483. He intrigued with the duke of Burgundy, Charles le Téméraire, against Louis, for which he was imprisoned in an iron cage in the castle of Onzain, 1469. He was, however, released in 1480, and went to Rome.

Baluster or **Banister** (from Gk. βαλυστήριον, the flower of the pomegranate), the name given to pillars or shafts supporting a cornice or coping. The pear-shaped swelling at the lower end of the pillar accounts for the origin of the name.

Balustrade is the range of equidistant balusters, together with the cornice or coping they support. They are used as parapets or to enclose stairs, and may be decorated with various devices.

Baluze, Etienne (1630-1718), Fr. historian. He served as bursar at the univ. of Toulouse, 1646-54, and afterwards acted as librarian to Le Tellier and the archbishop of Auch, obtaining, in 1667, a similar situation with the famous Colbert, which he held until 1700. He held various other positions, and in 1707 was appointed inspector of the Royal College of France. His chief works are *Capitularia Regum Francorum*, 1677; *Miscellanea*, 1678-1715; *Nova Collectio Conciliorum*, 1683; *Vitæ Paparum Arentionensium*, 1693; *Historiæ Tulensis Libri III.*, 1717. On account of his *Histoire généalogique de la maison d'Autvergne*, 1708, B. was exiled in 1710, but was recalled to Paris in 1713.

Balzac, Honoré de (1799-1850), Fr. novelist, b. at Tours, of a well-to-do bourgeois family. From 1806 to 1813 he attended the Collège de Vendôme, and for the following three years the Collège de Tours, but he showed no aptitude for study, though he must have read widely in his early youth. Much of his school life is reflected in the pages of *Louis Lambert*, 1832. His father put him to study law at the Sorbonne, but B. kicked over the traces, refused to practise, and in 1819 went to Paris, confident of his real vocation. From 1820 to 1829 he tried his hand at tragedy and at novel writing, but made little progress in either. It was a period of hard work and privation. In 1825 he started business as a publisher, printer, and type-founder—a speculation which entailed debts that harassed him almost to the end of his life. The publication of *Les Chouans* in 1829 marks the beginning of his literary career. Though it has been termed melodramatic, it is superior to his previous work, giving a brightly coloured picture of Brittany in 1799. The imitation of Scott is obvious.

From 1829 B. worked with untiring energy. In 20 years he produced 85 novels, in addition to his dramatic attempts, articles to the newspapers, miscellaneous minor works, and a lengthy correspondence, addressed chiefly to his sister Laure and her friend Mme Zulma Carrand. Some of his best-known works may be mentioned: *Les Contes drolatiques*, which are written in a Rabelaisian vein, and must be classed separately from his novels; *La Maison du chat qui pelote*, 1830; *La Femme de trente ans*, 1831; *La Peau de chagrin*, 1831; *Le Chef-d'œuvre inconnu*, 1831; *La Bourse*, 1832; *Eugénie Grandet*, 1833; *Les Marana*, 1833; *Le Père Goriot*, 1834; *La Recherche de l'absolu*, 1834; *Séraphita*, 1835; *Les Illusions perdues*, 1834; *La Cousine Bette*, 1846.

B. conceived the idea of uniting his various pieces into one mighty whole, under the title *La Comédie humaine*, which should comprise all the multifarious aspects of life—*scènes de la vie parisienne, de la vie militaire, de la vie privée*, and so on. This vast scheme was not completed.

In Paris he made numerous friends, including Victor Hugo, Vigny, George Sand, and Lamartine. He fell in love with a Polish lady, Mme Hanska, who was his ideal to the end of his life. Though her husband d. in 1840, debts and other causes prevented B. from marrying her till a few months before his death. He was buried in Paris on Aug. 29, 1850, the pall-bearers being Dumas, Hugo, Baroche, and Sainte-Beuve. Hugo delivered the funeral oration.

B.'s genius is undeniable. He flashed on all the little, unnoticed things the lurid light of his imagination, and therefore he has been called both a realist and a romanticist, according to the point of view of the reader. Nothing escaped his notice, and in the remorseless handling of his material he has been accused of exposing the sordid, unhealthy side of life. But it cannot be doubted that his aim was moral, in the widest sense of that term. His stage is so vast, his persons so true to life, that as a creative genius he stands among the greatest writers of all time.

See Everyman's Library (translations of 15 of the best-known novels); C. L. Kenney, *Balzac: his Life and Letters*, 1878; A. le Bréton, *Balzac, l'homme et l'œuvre*, 1905; J. M. Burton, *Honoré de Balzac and his Figures of Speech*, 1921; W. H. Royce, *A Balzac Bibliography*, 1929. Lives by Sir F. Wodmore, 1887; F. Lawton, 1910; F. Gribble, 1930; S. Zweig, 1947.

Balzac, Jean Louis Guez de (1594-1654), Fr. essay-writer, b. at Balzac, near Angoulême. He went to Italy with Cardinal de la Valette, and was struck by the rich smoothness of the It. style as compared with that of his own country. His writings mark the beginning of polish and elaboration, before unknown in Fr. composition. His *Letters* were pub. in 1624; *Le Prince*, 1631; *Discours*, 1644; *Le Baron*, 1648; *Le Socrate chrétien*, 1652; *Aristippe*, 1658. He became a member of the Fr. Academy in 1634, and was a friend of Richelieu. His collected works were pub. in 2 vols. (1665).

Balze, Jean Etienne Paul (1815-84), Fr. artist, was b. at Rome, and made his début at the Salon in 1835 with a painting from Scott's *Lady of the Lake*. He was assisted by his brother, Jean Antoine Raymond (b. 1818), in his reproductions from Raphael, and in his mural paintings in the palace of the senate re. the scientific, agric., and industrial discoveries of the nineteenth century. Other works: *'La Mort de Sixte IV.'*, 1856; *'Le Couronnement de la Vierge'*, 1859; and *'Le Triomphe de Galatée.'*

Balzico, Alfonso (1825-99), It. sculptor, b. at Cava di Tirreni, near Salerno. He studied at the academy of Naples and at Rome, where he executed the colossal

statue, of John the Baptist. 'Cleopatra,' 'The Coquette,' 'Revenge,' and 'The Tree' were executed by special request of King Victor Emmanuel. His other works include 'Massimo d'Azeglio,' 1873, and 'Duke Ferdinand of Genoa,' both at Turin, and 'Victor Emmanuel,' 1897, at Naples.

Bamangwato, African tribe, of the Bantu race, and the largest tribe of the Bechuanaland Protectorate, numbering about 102,000. See BECHUANALAND.

Bambarra, or **Bambara**, name sometimes given to a dist. of W. Africa, in the colony of Fr. Sudan (until 1920 known as Upper Senegal and Niger), the name being that of the Negro tribe that inhabits the area. Segu (pop. 8229) is the cap. of the dist., and was formerly the seat of the native ruler; Sansandig, on the Niger, was once an important trading centre. The dist. is fertile and rich in minerals. See SUDAN, FRENCH.

Bamberg, city of Upper Franconia, Bavaria, situated on the Regnitz, not far from its entrance into the Main, 33 m. N.W. of Nuremberg. There are many interesting buildings of an early date—the old castle of the former prince-bishops of B., the ruins of the castle of Altenburg, once the seat of the count of Babenberg, and the cathedral. The last-named is a magnificent structure in the Byzantine style, founded by the Emperor Henry II. in 1004. It suffered from a conflagration and was restored in 1110. There are many interesting medieval tombs, a beautifully carved choir screen, and the crypt is a fine example of early Romanesque. The modern buildings include an art gallery, a municipal hospital, and a theological and philosophical high school. The industries are tobacco, textiles, leather, electrical, and brewing. Pop. 54,000.

Bamberger, Ludwig (1823–99), Ger. politician and economist, b. at Mainz, of Jewish parentage, studied law at Giessen, Heidelberg, and Göttingen. He took part in the revolutionary movement at the time when he was editing the *Mainzer Zeitung* (1848–49). He was a member of the National Liberal party in the Ger. Reichstag (1871–80). He was a free-trader and opposed the economic policy of Bismarck. With other Liberals he seceded from the party, forming a group of 'Secessionists,' the later Liberal union which opposed the colonial policy of the Gov. His books include: *Erlebnisse aus der pfälzischen Erhebung*, 1849; *Monsieur de Bismarck*, 1868; *Die fünf Milliarden*, 1873; *Deutschthum und Judenthum*, 1880.

Bambino (It., babe), a term in art applied to the swaddled figure of the infant Christ, and particularly to the Santissimo B. in the church of Ara Coeli, Rome, which is supposed to have miraculous healing power. It is a richly decorated figure carved in wood. The festival of the B. takes place at Epiphany.

Bamboccio, **Pieter van Laer** (1613–c. 1673), Dutch artist, b. at Laer, Holland. Studied at Rome. Classical art he neglected, and delighted in fairs, rustic parties, banditti, etc., subjects which the

its comprise under the general name *bambocciati*. Hence his name, B., not, as some have said, owing to the deformity of his person.

Bamboo (*Bambusa*), genus of Gramineæ which grows in the tropics of Asia, Africa, and America. The plants are in reality gigantic grasses with a jointed subterranean rhizome, which is the true trunk of the B., the shoots being the branches. The stems are hollow and contain only a light pith, but they are jointed and at the nodes strong partitions stretch across the inside. The Bs. grow in clumps, and may reach a height of 120 ft. and a thickness of 10 in. The young



BAMBOO

plants for the first few years produce a well-stored rhizome, but when once they begin to increase in height their growth is very rapid. Some species flower only once, some every year, and others at longer intervals.

The B. is noted for its great economic importance, and serves a variety of useful purposes. The young shoots of some species are cut when tender and eaten like asparagus; the seeds also are sometimes used as food, and for making beer; some species exude a saccharine juice at the nodes which is of domestic value; the rhizomes and shoots, when pickled, form a condiment; silica, found in the stems of *B. arundinacea*, is used in E. medicine. The hard stems are converted into bows, arrows, quivers, lance shafts, masts of vessels, bed-posts, walking-sticks, poles of palanquins, rustic bridges, bee-hives, water-pipes, gutters, furniture, ladders, domestic utensils, and agric. implements. Split up finely they afford a most durable material for weaving into mats, baskets, window blinds, ropes, and even sails of boats. Perhaps the greatest use to which they are put is in building, for in India, China, Japan, Assam, Malay, and other countries of the E., houses are frequently constructed solely of this material.

Bamburgh Castle, in the vil. of B., off the coast of Northumberland, 16½ m. S.E. of Berwick. According to the A.-S. Chronicle it was built by Ida, first king of Northumbria, in 547, and called Bebbanburgh after his wife, Bebbe. It has massive strength and dignity, rising high out of a rock 150 ft. above the sea. It belongs to the Norman period, and has a fine keep and an apsidal chapel dedicated to St. Peter. The castle was attacked by Penda, king of Mercia, in 642, and was twice taken by Dan. invaders. In 1095 Robert de Mowbray surrendered the castle to William Rufus. During the wars of the Roses it was twice taken by the Yorkists and twice recaptured by Margaret. Elizabeth appointed Sir John Forster to be its governor, but this right was forfeited by his descendant, Tom Forster, for his share in the rising of 1715. In 1721 the castle was bought by Lord Crew, and its restoration was carried out under the direction of Rev. Dr. John Sharpe. From this time onwards the proceeds from the castle went to charitable purposes till in 1894 it was bought by Lord Armstrong for almshouses. B. was a royal borough and returned two members to Parliament. Grace Darling's grave is in the churchyard.

Bambuk, country in W. Africa, formed by the angle between the R. Senegal and its trib. Falemé. The climate is unhealthy, but the soil is rich and remarkable for its fertility. The vegetation consists of tamarind, baobab, calabash, acacias, and palm-trees. Maize, rice, millet, cotton, and water-melons are cultivated. The country is rich in iron-ore and gold deposits, the latter especially in the R. Falemé. The pop., estimated at 800,000, consists of Mandingoes, professedly Muslims. The B. country belonged to the Portuguese in the fifteenth century, and was recognised as part of the Fr. Sudan in 1858. The chief tns. are Kayes, Faranaba, and Mardinka.

Bambusa, see BAMBOO.

Bamian, valley in Afghanistan, 50 m. N.W. of Kabul, near the N. base of the Koh-i-Baba Mts. The B. or Hajikhak Pass, at an elevation of 8496 ft., on the road from Kabul, is the only known pass for military purposes over the Hindu Kush, and was once crossed by Alexander the Great. There are a number of cells hewn in the rock, and carved human figures of enormous size. The largest figure stands 173 ft. high. These remains seem to indicate that the place was once a centre of Buddhist worship. There are many interesting ruins of mosques and tombs belonging to the old city Ghulghuleh, which was destroyed in 1221 by the Mongols under Genghis Khan.

Bampton, mrkt. tn. in Devonshire, England, 6 m. N. of Tiverton. There is a weekly market held on Saturday, and two fairs in the year, one on Whit Tuesday and one on the last Thursday in Oct. Pop. 1500.

Bampton, John (1690-1751). Eng. divine and the founder of the B. Lectures (q.v.). He graduated from Trinity Col-

lege, Oxford, 1709, and took his M.A. in 1712. He held a preferment in Salisbury cathedral from 1718 till his death.

Bampton Lectures, course of 8 divinity lecture sermons, called after their founder, Canon John B. (q.v.), who left an estate of £120 for their endowment. They are preached in alternate years at Great St. Mary's, and 30 copies are pub. within two months of their being preached, at the expense of the estate. The lecture is chosen on the fourth Tuesday in Easter term by the heads of colleges, and the lecturer must be an M.A. of Oxford or Cambridge, and cannot be chosen twice. The lectures must be based 'upon the divine authority of the holy Scriptures—upon the authority of the writings of the primitive Fathers as to the Faith and Practice of the Primitive Church—upon the Divinity of our Lord and Saviour Jesus Christ—upon the Divinity of the Holy Ghost—upon the articles of the Christian Faith, as comprehended in the Apostles' and Nicene Creeds.'

Ban, word found in many European languages, in various senses, but as the idea of publication or proclamation runs through them all, it is the anct. word B. still preserved in Gaelic and Welsh, with the sense of proclaiming. It occurs in Spenser, Marlowe, and Shakespeare. On the foundation of churches and monasteries, writings were drawn up specifying what lands the founders and other benefactors endowed them, and as these frequently concluded with curses which would fall on any one who should attempt to divert the land from the purposes for which they were bestowed, the word has come to be associated with cursing. Hence the common use of the term. Persons who escaped from justice or opposed the church were placed under a B. (see BANISHMENT). A similar word was used in Germany with the sense of outlawry. In France a proclamation to call the people to arms was called a B., and those people liable to be called out came under the same name, so we have the *banlieue* of a city, and hence the modern use of the word. The Fr. also use the word in the sense of the Eng. word banns (q.v., under MARRIAGE).

Ban, Banus, from the Slavonian *ban*, a chief, the name given to a governor of certain dists. in the kingdom of Hungary, Dalmatia, Croatia, Slavonia, Bosnia, and Szörény. His power was unlimited, like that of a margrave, and he took command in time of war for the defence of his banat. In 1849 the Bs. of Croatia, Slavonia, and Dalmatia were declared independent of Hungary and received their orders from Vienna. In the year 1867 these banats were incorporated with Hungary, and one of the Hungarian ministers was appointed B. of Croatia and Slavonia by the king under the direction of the president of the council and the Hungarian ministers. See BANAT.

Banam, tn. in Cambodia, Cochin China, on the Tien, cap. of the prov. B.; pop. 28,000.

Banana (*Musa sapientum*), species of the order Musaceæ, which grows in all

tropical countries. The fruit is a long berry, from which, through cultivation, the seeds have disappeared, and forms a valuable food. The plantain or pisang (*M. paradisiaca*), similar to the B., has a larger fruit of a milder taste. The plants on which they grow are in reality herbs, but have a tree-like appearance, and attain a height of 5 to 25 ft. At the apex of the stem grows a bunch of palm-like leaves, from the centre of which the flowers grow in spikes. In tropical countries the fruit is the chief food, and *M. textilis* of the Philippine Is. yields the fibre known as Manila hemp. Jamaica and Fiji are among the Brit. colonies which have a large export trade in Bs. to the United Kingdom market. The total world production is about 2½ million tons. The chief exporting countries before the Second World War were Jamaica, 375,000 tons; Mexico, 290,000 tons; Honduras, 270,000 tons; Brazil, 230,000 tons; Guatemala, 170,000 tons; Colombia, 160,000 tons; and Canary Is., 190,000 tons. See C. W. Fawcett, *The Banana*, 1921.

In Jamaica the B. industry in recent years assumed great proportions, the exports exceeding 26,900,000 bunches in 1939; but this total has not since been approached. The Jamaica B., which is the variety known as the *Gros Michel*, is cut when it is about three-quarters full, so that the fruit on the trees in Jamaica is green and not the familiar yellow. The smaller Canary B. (*M. cavendishii*) was exported from Barbados before the First World War, but the industry was suspended for want of shipping space. The two kinds of Bs. were existing in the W. Indies when the famous Fr. missionary, Père Labat, visited the is. in 1696. The larger species was known to him as the *bananier*, and the smaller as the *figuier*. The former grows to a height of 20 ft., the Canary tree some 10 or 12 ft. The Jamaican industry, however, has been largely destroyed by the incidence of the disease known as B. leaf spot. The disease is caused by *Mycosphaerella muscicola*, and was first recorded in the W. Indies in 1934; but until 1941 it was considered to be caused only by the imperfect fungus *Cercospora musae*, first described by Zimmern (1902) in Java. Only recently has the existence of the perfect stage of the fungus (*Mycosphaerella muscicola*) been estab. by the Leaf Spot Control Div. of the Jamaican Dept. of Agriculture. Following on the experience gained by the United Fruit Company in Central America, and from the original spraying trials carried out in Jamaica in 1937-38, considerable progress has been made towards combating the disease.

Banana, port of the Belgian Congo, W. Africa, cap. of the dist. of the same name. It is situated at the N. of the mouth of the Congo. There are a number of Eng., Fr., and Dutch factories, and steamships run to Liverpool and Antwerp. The chief exports are palm oil and nuts, gum, and rubber. Pop. 3000 (300 whites).

Bananal, tn. in the state of São Paulo, Brazil, on the railway running between

São Paulo and Rio de Janeiro. Pop. 151,000.

Banas, riv. of Rajputana, India, near the Aravalli Hills. It flows in a N.E. direction until it joins the Chambal. Length about 300 m.

Banat, in general, a region under a ban; more particularly applied to a dist. in S. Hungary, which was divided by the treaty of Trianon (1920) between Rumania and Yugoslavia.

Banbridge, tn. in co. Down, N. Ireland, on the Bann, 22 m. S.W. of Belfast. Its prin. manuf. is linen. Pop. 3000.

Banbury, tn. in Oxfordshire, England, on the Cherwell and the Oxford Canal, 23 m. N. of Oxford. The Yorkists were defeated in the neighbourhood in 1469. The old castle, built in 1125, was destroyed during the Civil war, when B. was noted for its Puritanic zeal. The term 'B. man' came to be used as an equivalent for a typical Puritan. B. Cross, of nursery rhyme fame, existed down to the time of Queen Elizabeth, and has now been replaced by a modern one. The tn. is still noted for its cake, cheese, and ales; the prin. industry is the manuf. of agric. implements. Pop. 14,000.

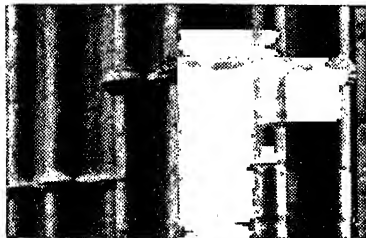
Banco, legal term for a seat or bench of justice. 'Sittings in B' or 'in banco' were formerly held at Westminster before two or more judges of the king's bench and exchequer and the court of common pleas. By the Judicature Act of 1873 two or more judges of the king's bench or probate div. of the High Court, sitting together 'in B.' for the purpose of trying issues of fact, are called a divisional court.

Banca, or **Bangka**, is. in the Malay Archipelago, belonging to the Dutch, situated S.E. of Sumatra, from which it is separated by the strait of B. With one or two neighbouring is. it forms a separate Dutch residency; pop. 160,358, including 68,359 foreign Asiatics, mostly Chinese. Area about 4500 sq. m. The most important product is tin, but other minerals found are gold, iron, silver, lead, amber, arsenic, and lignite. The chief vegetable products are bananas, durian, coco-nuts, nutmegs, benzoin, and sago. During the Second World War the Jap. attacked the is. by air on Feb. 7, 1942, and occupied it with their troops on Feb. 28. The Dutch regained control in 1946.

Banchory, small tn. in Kincardineshire, 17 m. W.S.W. of Aberdeen, on the Dee.

Bancroft, George (1800-91), Amer. historian, diplomat, and statesman. He graduated from Harvard College at the age of 17, studied hist. in Göttingen, where he received a degree of doctor of philosophy, and on his return to America in 1820 became Gk. tutor at his own college. In conjunction with Dr. Joseph Cogswell he estab. a school at Northampton, with which he was connected till 1830, when he devoted himself wholly to historical studies. He was made collector of the port of Boston, 1838-41, by President Van Buren. As secretary of the Navy he had a seat in the Cabinet of President Polk, 1845. Appointed minister to Great Britain, 1846-49, minister to Berlin, 1867-74. He was a democrat, and his

historical work, written at the time of the Civil war, was influential in inspiring an ideal conception of liberty. The first vol. of the *History of the United States* appeared in 1834. His miscellaneous publications: *Poems*, 1823; *History of the Colonisation of the United States*, 1841; *An Oration* (in memory of Andrew Jackson), 1845; *A Plea for the Constitution of the United States*, 1886; *Martin Van Buren*, 1889.



BANDS, OR MOULDINGS

Bancroft, Hubert Howe (1832-1918), Amer. historian, b. at Granville, Ohio, May 5. He opened a bookshop at San Francisco in 1852, and made a large fortune, which he devoted to collecting documents—chiefly about Amer. hist.—and forming a fine library. His own contributions to historical literature include: *The Native Races of the Pacific States*, 1874-76; *The History of the Pacific States of North America*, 1882-90; *Popular History of the Mexican People*, 1888; *British Columbia*, 1887; *The New Pacific*, 1900. He also wrote *Retrospection, Political and Personal*, 1913.

Bancroft, Richard (1544-1610), Eng. prelate. He was b. at Farnworth, Lancashire, and was sent, at the expense of his great-uncle, Hugh Corroen, archbishop of Dublin, to Cambridge. In 1576 he became rector of Teversham, near Cambridge, and rose rapidly to the bishopric of London in 1597. He became archbishop of Canterbury in 1604, and chancellor of Oxford Univ. in 1608. In the reign of James I. he was appointed commissioner on behalf of the Church of England in the Hampton Court conference. He opposed Puritanism, and was a supporter of the theory of the divine origin of episcopacy.

Bancroft, Sir Squire (1841-1926), Eng. actor-manager, b. in London. His first appearance on the stage was at the Theatre Royal, Birmingham, as Lieutenant Manley in *St. Mary's Eve*. He remained in the provs. for 4 years. In 1865 he appeared in London at the Prince of Wales's Theatre as the leading actor, under the management of H. J. Byron and Marie Effie Wilton. Two years later he married Miss Wilton and continued with her the management of the Prince of Wales's till 1880, when they moved to the Haymarket. They retired from

management together in 1885. In 1893 he appeared by the command of Queen Victoria at Balmoral Castle in *Diplomacy*. He was knighted in 1896. Collaborated with Lady B. in *Mr. and Mrs. Bancroft On and Off the Stage, Written by Themselves*, 1888, and was the author of the *Bancroft Recollections of Sixty Years*.

Band, in architecture, the name given to a flat strip or fascia, encircling a building or continued along a wall, usually horizontally. Also used of a B. of foliage, quatrefoils, or bricks. Special varieties of Bs. are indicated by the terms lintel course, frieze, platband, string course, etc.

The B. of a shaft is the moulding which encircles pillars of small shafts, characteristic of Gothic architecture, and very prevalent in the Early Eng. style.

Band, linen appendage to the neck-cloth or collar forming a part of the clerical, legal, or academic costume. Some regard it as a survival of the amice, while others date it back to the collar worn by laymen in the reign of James I. It still forms part of the legal costume in England, but has been replaced in Scotland by the white tie, except in the case of the king's counsel. Also worn by ordained Presbyterian ministers as distinguished from Hcentiates.

Band: 1. *Military*. Military Bs. are composed mainly of wind instruments and drums, but their composition is not uniform, varying in different countries and even in different regiments. Generally speaking, an ordinary Brit. regimental B. consists of at least a dozen ordinary clarinets, 2 brass clarinets and a small clarinet, oboe, piccolo or flute, 2 bassoons, 2 saxophones, 4 horns, 4 cornets, 2 trumpets, 3 trombones, 2 euphoniums, 4 bombardons, and a variety of percussion instruments played by 2 drummers (Scholes). The instruments used in cavalry and artillery regiments include bugles, while Highland regiments have bugles, fife, bagpipes, and drums; but a distinction must here be drawn between the military B. proper, which consists of brass, reeds, and percussion instruments, and the marching B. of drums, fife, and bugles, etc. The brass B. strictly so-called is dealt with below. For centuries European armies have had their Bs., which were used for making signals in battle and to give encouragement to the fighters. The idea of present-day Bs. was introduced into Europe by the crusaders, who took it from the Saracens. In the sixteenth century Bs. became uniform and the Eng. 'drum march' won continental fame. Modern Bs. owe their inception to Frederick the Great, who used them as means to make army service popular. His B. in 1763 consisted of 2 oboes, 2 clarinets, 2 horns, and 2 bassoons. Within fifteen months France, Austria, and England had adopted similar Bs. Coloured men were employed in Brit. Bs. for many years as drummers and to play the symbols, 'jangling Johnnies,' and similar instruments. They ceased to be employed in 1843. In 1823 the War

Office ordered all officers to contribute towards their Bs. Valve instruments were introduced in 1830. In 1857 the Gov. instituted a Royal Military School of Music, at Kneller Hall, near Twickenham, which was at first supported partly by Gov. and partly by the various Brit. regiments. In 1867, however, the War Office took over the entire expenses. This institution trains B. sergeants, recommended by their commanding-officers, for the position of bandmaster, and also trains promising young instrumentalists from such schools as the Duke of York's. Every officer, when serving abroad, contributes not more than 12 days' pay of his rank to the B. fund. Apart from these subscriptions, Gov. maintains the upkeep of regimental Bs. All Brit. cavalry and infantry regiments have Bs. on their establishments. Other corps have one or more Bs. Bs. vary in strength; staff Bs., such as those of Household Cavalry and Foot Guards, R.A., R.E., and Royal Marines, have more musicians than those of line regiments. In time of peace Bs. are supplemented by acting bandsmen and boys; in war bandsmen act as stretcher-bearers. The best-known military Bs. are the Guards, the R.A., and the Royal Marines. The duty of regimental Bs. is to play at parades, at 'marches out,' at the officers' mess, and when required to do so by their officers. Subject to military exigencies, they may also accept private engagements. When the regiment leaves home on active service the B. is usually left at home, unless the regiment is expected to be absent on long service. After the Crimean war a uniform pitch (old Philharmonic) for Brit. Army Bs. was introduced; in 1928, however, they adopted the new Philharmonic pitch, thereby conforming, at considerable expense from the adaptation of instruments, to the slightly lower pitch of civilian Bs.

2. *Naval, etc.* Flag-ships and other large ships in the R.N., when commanded by an officer of post-captain or of higher rank, very frequently possess Bs. The number of performers ranges between 10 and 15, the bandsmen being recruited from the boy Bs. of training ships. Royal Marines Bs. are also popular favourites. The Royal Air Force also has its Bs.

3. *Volunteer, etc.* With the growth of the volunteer movement many volunteer Bs. were formed, which were organised as far as possible on the model of the army Bs. These disappeared when the old volunteer force was abolished. Practically all the infantry and such leading artillery units as the Honourable Artillery Company (H.A.C.) of the modern T.A. have their own Bs. The brass B. proper is a type of instrumental combination which is especially suitable for open-air performance and amateur cultivation. It is found throughout Europe and is particularly popular in the N. cos. of England, where numerous tns. and dists. possess brass Bs. more or less resembling military Bs. As a movement brass Bs. began early in the last

century, and at the beginning of the present century there were at least 5000 such Bs. in the United Kingdom, exclusive of the Salvation Army Bs. As in the case of the military B. it is difficult to specify categorically the constituent instruments of a brass B., but generally they consist of members of the cornet and saxhorn family, together with trombones. A normal Brit. brass B. has 24 players, besides percussion. At one time every autumn the contest of the brass Bs. of Great Britain was a popular festival at the old Crystal Palace. The National Brass B. Church Festival is held at the Albert Hall. *See also* DANCE BAND.

Band, Bund, or Bend, the Persian word for a dike or an artificial embankment, is often met with as a component part of names in E. geography; e.g. in the name of the Persian riv. Bendemir. This riv. was so called after Emir Azadaddaula, who raised a dike on the riv. near the ruins of Persepolis in order to procure water for fertilising the land.

Banda, cap. of the dist. of the same name, United Provs., India, situated on the r. b. of the R. Ken. There are 66 mosques and 161 Hindu temples in the city. It is a centre of the cotton trade. Pop. 20,000. The dist. has an area of 3061 sq. m.; pop. 613,000. During the Second World War it was occupied by Jap. troops early in the winter of 1942.

Banda Islands, group of is. belonging to the Dutch E. Indies, situated about 50 m. S. of Ceram, their mean lat. and long. being respectively 4° 30' S. and 129° 50' E. Area 17 sq. m. The is. are volcanic, the Gunong-Api, 2000 ft. high, rising from the centre of the group, and eruptions and earthquakes frequently occur. There are 12 is. in all, the most important being B.-Neira, B.-Lontor, Gunong-Api, and Pulo-Ay. The pop. is estimated at 10,000, the great majority being native descendants of emancipated slaves. Nutmeg is the chief production, but sago, mace, and coco-nuts are also cultivated. B., in B.-Neira, is the centre of trade and the seat of the Dutch Gov. B.-Lontor, B.-Neira, and Gunong-Api form between them part of the circle of the crater of an anct. volcano. The space thus formed is an excellent harbour, with good entrances on either side. The is. were first visited by the Portuguese, who made a settlement in 1520, but they were expelled by the Dutch c. 1580. The Eng. afterwards contended for a settlement, but the is. were finally acquired by the Dutch 1801-16. They were occupied by Jap. forces during the Second World War, but were liberated in 1945.

Bandage, a strip of muslin or other material, of varying widths and lengths, used by surgeons to support a part of the body or to restrict movement, to apply pressure in order to prevent bleeding or swelling, or to fix dressings or apparatus in their places. Bs. may be simple, when they consist of one piece, as the roller and triangular B.; or compound, when they consist of two or more pieces.

The *Roller B.* is usually a strip of calico, flannel, linen, or muslin, about 18

ft. in length and 2-4 in. in width. In bandaging a limb, the turns commence at the extremity and proceed upwards, so that the blood is partly driven from the limb. Circular bandaging consists of taking circular turns around the part, each loop covering about two-thirds of the width of the loop previously applied. Oblique bandaging means making the loops at an oblique angle to the axis of the limb. As the arm and leg gradually increase in diameter from the extremity upwards, simple, circular, or oblique bandaging would tend to bind the limb by the edge of the strip only, leaving portions of the skin too loosely bound. To remedy this, the B. is occasionally reversed; that is, the strip is turned so that the surface previously in contact with the limb becomes the exterior surface, and vice versa. When a joint such as the knee or elbow has to be passed, the turns cross each other like a figure of 8. The 'spica,' also used for passing projections in the limb, is an arrangement resembling the overlapping of the husks in an ear of corn. When sufficient turns have been taken, the end of the B. may be split in two, one tail carried round the limb in a direction reverse to the turns and securely tied to the other tail; a better plan is to sew the end, or fasten it by a safety pin, care being taken to pass the needle or pin through two or three previous loops, so that the whole may be held firmly together without undue pressure from any single loop. The fingers and toes should never be bandaged with two injured surfaces touching, as there would be considerable danger of adhesion. If the extremities of the toes or fingers are not involved in the injury, they should be left uncovered, as their appearance will indicate whether the circulation has been unduly interfered with, when the B. will have to be readjusted. Any inequalities of pressure may be remedied by the use of paddings of cotton wool.

Bs. of rubber fabric are used when considerable pressure is required, as in sprains or varicose veins. Martin's rubber B. is used to lend support in cases of varicose veins. It consists of a roller B. which is wound spirally about the leg while the patient is in a horizontal position. It should not be tight, and the necessity for reversing is obviated as the elasticity of the rubber tends to keep all parts of the B. in contact with the surface of the limb. Esmarch's B. is used to prevent hæmorrhage from a limb during amputation. It is wound spirally about the limb with considerable pressure, beginning at the extremity, so that the blood is driven from the limb as much as possible. When the B. has passed above the seat of the proposed operation, a thick piece of rubber is bound tightly round the limb so as to prevent the return of the blood and thus save it for the remainder of the body. Before the widespread use of anesthetics such an arrangement was used not only to prevent hæmorrhage, but also to diminish pain.

The *Triangular B.* consists of a piece of thin calico made by cutting a square

yard diagonally, two such Bs. being thus provided. The 'broad B.' is made by bringing the right-angled 'point' to the 'centre' of the long side, and folding the trapezium thus formed once again. The 'narrow B.' is made by folding the broad B. yet again. The triangular B. is used chiefly in first-aid work, being adaptable to many different uses. To cover the top of the head for securing dressings on wounds, the centre should be placed between the eyebrows, the point allowed to hang over to the back of the head, and the ends passed round to the back, crossing over the point and brought together again on the forehead, where they are secured by a reef knot; the point is then turned up and safety-pinned on the top of the head. A sling for fracture of the collar-bone or forearm is made by placing one end of the B. over the sound shoulder, the operator standing in front of the patient; the forearm of the injured part is then drawn across the chest so that the point of the B. is on a level with the elbow; the other end of the B. is brought in front of the arm and carried over the shoulder of the injured side, the two ends being tied behind the neck, but in such a position that the knot is not in the way of the patient when lying down; the point is then brought round the elbow and secured in front by a safety pin. To B. the foot, the sole is placed on the B., the toes being directed to the point. The point is then brought up above the front of the ankle, the ends crossed over the instep, and the point passed under the foot and over again and tied behind the ankle. The triangular B. may also be made into a tourniquet by folding it very narrow and tying a knot to the middle. The knot is placed over the artery when the bleeding occurs in the upper arm or thigh; the ends are passed round the limb and tied tightly. Additional pressure may be imparted by pushing a thick pencil between the tourniquet and the limb, and twisting it. In tying knots in Bs. the reef knot must be used in preference to the granny knot; that is, after making one bend in the ordinary way, the second half should be tied in the reverse direction. See M. Farnworth, *Roller and Triangular Bandaging*, 1940; L. Oakes, *Illustrations of Bandaging and First Aid*, 1942.

Bandaisan, volcano of 5100 ft. in height, situated in the main is. of Japan. An eruption occurred in 1889.

Bandanna, or **Bandana**, a particular kind of silk or calico handkerchief on which has been printed a pattern made up of spots and diamonds. B. handkerchiefs were originally made in India, but are now manufactured in England. The handkerchief is first dyed one colour, and then placed between leaden plates, on which the pattern has been cut out, and put into a powerful Bramah press, when the colour is discharged by means of a bleaching liquid, and the spots are left white on the dyed background.

Bandar Shah, one of the prin. Caspian Sea ports of Persia (Iran) in the prov. of Astrobad. Pop. 25,000.

Bander Abbas, which means 'harbour of Abbas,' from the Shah Abbas Is., tn. on the N. shore of the Persian Gulf, belonging to the Kirman prov. in Persia. It is 12 m. N.W. of the Is. of Ormuz. It has port accommodation, and good anchorage for large vessels in 4-5 fathoms, about 2 m. off tn. Its trade is small. The exports are cotton, tobacco, drugs, dyes, opium, dried fruits, carpets, woollen and silk goods. The imports are dry goods, sugar, spices, glassware, and hardware. Under the name of Gombroon, it at one time took its place among the first seaports of Persia. The tn. is surrounded by walls. The Eng. were allowed to build a factory in 1620, and the Dutch soon after received the same permission. The old Dutch factory still stands. Pop. 10,000.

Bander-i-Gaz, or **Bendar-i-Gez**, port on the Caspian, Persia. Its chief exports are raw cotton, almonds, dates, raisins, wheat, wool. Its chief imports are glass, grain, and manufactured goods.

Bandawe, mission station in Nyasaland, on the W. shore of Lake Nyasa.

Bandel, Joseph Ernst von (1800-76), Ger. sculptor, b. at Ansbach in Bavaria. His chief work was a colossal statue of Arminius, at Detmold.

Bandelier, Adolph Francis Alphonse (1840-1914), Amer. archæologist, b. at Berne, Switzerland. He went as a youth to U.S.A. and devoted his life to archæology; studied and travelled in Central America and S.W. U.S.A. for the Archæological Institute of America and the Amer. Museum of Natural Hist.; wrote extensively on anct. Amer. civilisation. Among his works are: *Tenure of Land and Inheritances of the Ancient Mexicans*, 1878; *Social Organisation and Mode of Government of the Ancient Mexicans*; *The Gilded Man*, 1892; *The Islands of Titi-caca and Koati*, 1910.

Bandello, Matteo (c. 1485-1562), It. writer, second only to Boccaccio as a story-teller. He was b. in Piedmont of good family, and early became a Dominican friar. In 1525 he left Italy after the battle of Pavia, and settled in France, where he became bishop of Agen (1550) and d. there 11 years later. His *novelle*, which number 214, provided themes for Shakespeare, Massinger, Byron, and others, and they were pub. at Lucca in 1554, and at Lyons in 1573. There is a danger of dismissing B. too lightly on the grounds of prolixity, coarseness, and want of humour. But he was a born raconteur, with a flair for finding his own stories, which the many who have borrowed from him may well have envied, even though he lacked the fecundity of invention and humanity of Boccaccio. He first acquired a reputation as a story-teller in the lesser coteries which formed around some socially ambitious woman of the aristocracy, and a number of his tales are believed to have necessarily been either anecdotal or else founded on *crimes passionnels* committed at no great distance from his own circle of acquaintances. One obvious example is the story of the wicked countess of Celano, and another

the far more celebrated story of the duchess of Malfi. B. is not lewd, though in his period it was the fashion to treat directly of certain aspects of a story which modern technique is content to leave implied. Technique may cavil at B.'s moral lessons, but his stories have a force which is more or less independent of technique. He had a natural gift for turning a bawdy tale into a salutary moral homily. His lovers are generally paragons of courtesy and, as has been well said, only communicate their natural desire through the devious channels of classical examples and precepts of honour. If often drawn out, B.'s style is simple and fluent, his narrative vivid and direct, his characterisation excellent and, above all, the movements of passion admirably represented. A tale which combines most of his merits is that of Anselmo and Angelica, a story of a gentleman of Siena and of the enemy whom he delivers from death. The well-known Eng. translation of 13 'Tragical Discourses or Tales' is that of Sir Geoffrey Fenton, which first appeared in 1567; and it gave the impetus to that wholesale pillaging by which poets obtained the material for so many of their greatest pieces. Fenton, who resided in Paris, seems to have chanced upon these popular stories from reading the rendering of Belleforest. His translation is one of the most notable surviving specimens of that stream of It. translations which filled the bookshops of the period. The latest ed., *Bandello: Tragic Tales. Translated by Geoffrey Fenton*, ed. by R. L. Douglas and H. Harris, was pub. in 1924. Wm. Painter's *The Palace of Pleasure* (1566) also contains translations from B., either direct or from the Fr.

Bandermassin, see BANJERMASIN.

Banderole (It. *banderuola*, little banner), long, narrow flag which flies at the mast-head of a fighting ship, or sometimes carried at the funeral of a great man. The word was also used for the streamer fastened to the lance of a knight, and had other meanings now obsolete. Another spelling is *bannerol*.

Bandes Noires, given to a body of Ger. foot-soldiers, who were employed in the It. wars by Louis XII. of France, in consequence of their carrying black ensigns after the death of a favourite commander. Another body of troops, formed of It., afterwards took the same name from the same cause, on occasion of the death, in 1526, of their leader, Giovanni de' Medici; and still later the Fr. regiment of Piedmont, who had served for a long while in Italy, followed the same example after the death of their colonel, the comte de Brissac, in 1569.

Band-fish, marine fish of the family Cepolidæ. It is elongated and has spiny rays. *Cepola rubescens*, the red B., is a Brit. species of vivid hue, and is about 15 in. long.

Bandicoot, name for the family of the Marsupials known as Peramelidæ. They are all natives of Australasia, and none is larger than a hare. In the structure of the hind feet they resemble the

kangaroo, but there is less disproportion between the limbs. They are all insectivorous, but sev. species are omnivorous. *Peragale* are the rabbit Bs., *P. lagotis* being known as the native rabbit in W. Australia; *Perameles*, which are fond of an herbaceous diet, include *P. nasuta*, long-nosed B., and *P. myosuroides*, saddle-backed B.; *Cheropus* are the pig-footed Bs.

Bandicoot Rat, a species of *Nesokia*, its scientific name being *N. bandicota*. It is a rodent of the family Muridæ, to which rats and mice belong. It is a native of the E., and its flesh is used as food in India and Ceylon.

Bandiera, Attilio (1811-44) and **Emilio** (1819-44), brothers of a Venetian family who incited a rising against the Bourbon tyranny of Naples in favour of It. independence, 1843. The rising failed and they fled to Corfu. With about 20 comrades, they landed in Calabria, expecting that their arrival would be the signal for a revolt. However, they were betrayed by one of their companions and were shot, with 6 others, in the square of Cosenza, July 25, 1844. Their letters to Mazzini, which were opened by the Brit. Gov., aroused keen interest, and were pub. by Mazzini under the title of *Ricordi dei Bandiera*, 1844.

Bandinelli, Baccio or **Bartolommeo** (c. 1489-1561), It. sculptor and painter, and disciple of Leonardo da Vinci. According to Vasari, his affection for da Vinci and hatred for Michelangelo led him to destroy the famous cartoon of the latter, which was supposed to excel da Vinci's on the same subject. Amongst his best-known sculptures are a statue of St. Peter, a fine copy of the Laocoön, 'Hercules slaying Cacus,' 'Bacchus and Orpheus,' and 'Adam and Eve.' See Vasari's *Lives* and Benvenuto Cellini's *Autobiography*.

Banditti, see BRIGANDS.

Bandoeng, or Bandung, tn. Java, 75 m. S.E. of Batavia. It is situated on the W. coast, near the volcano of Guntur. Pop. 166,800. During the Second World War the Dutch defences here were pierced by the Jap., and heavy pounding from the air led the Dutch to sue for an armistice to save the civilian pop. After the Jap. collapse in 1945, B. became (Dec. 1945) the main centre of resistance in the Indonesian nationalist revolt. See further under JAVA.

Band of Hope Movement, started about 1847 with a number of disconnected children's temperance societies, organised itself in 1855 into the United Kingdom Band of Hope Union, which has now over 25,000 branches and upwards of 3,000,000 members. The official organ of the union is the *Band of Hope Chronicle*. The office is at Great Peter Street, London, S.W.1. There are also Scottish and Irish unions.

Bandolier, also **Bandoleer** and **Bandolier**, broad leather belt worn over the shoulder, across the breast, and under the arm. As worn by the old musketeers, it had attached a bag for balls and a number of metal cases or pipes, each containing

a charge of gunpowder. Later the B. was fitted with leather pockets for cartridges.

Bandoline, gummy perfumed substance, variously produced from quince seeds, gum tragacanth, and Irish or Iceland moss, used to impart glossiness and stiffness to the hair. It is usually scented with attar of roses or oil of bitter almonds.

Bandon, or Bandonbridge, tn., Co. Cork, Eire, 20 m. S.W. of Cork, on both banks of R. B. Has distilleries and woollen, leather, and cotton industries. Pop. 3000. The R. B., 40 m. long, rises in the Carberry Mts., near Dunmanway, and flows S.E. into the harbour of Kinsale.

Bandra, tn. in the Thana dist., India, connected with Bombay by a causeway and bridge; pop. 29,000, of which about 8,000 are Christians.

Bandy, See ICE HOCKEY.

Baneberry, or Herb Christopher (*Actæa spicata*), species of Ranunculaceæ, a native of Europe. When mature the plant bears black and poisonous berries.

Baner, Banner, or Banier, Johan (1596-1641), Swedish general, b. at Djursholm near Stockholm, and d. at Halberstadt in Germany. At the battle of Breitenfeld, Sept. 17, 1631, he commanded the right wing of the army under Gustavus Adolphus, and on the death of Gustavus he was made field-marshal. His two most celebrated victories were those of Wittstock in 1636 and Chennitz in 1639.

Banerjee, Sir Surendranath (abbreviated and corrupted form of *Surendra-Nātha Vandyopādhyāya*) (1848-1925), Indian nationalist, son of a Brahman physician in Calcutta, where he was b. and attended Doveton College; entered Bengal Civil Service, 1871, at Sylhet, Assam, where his conduct led to removal from the service. In 1875 prof. of Eng. literature at the Metropolitan Institute of Calcutta; in 1876 took part in founding and became secretary of the Indian Association. Founded Ripon College, 1882. Estab. *Bengali* weekly in 1879; it became a daily in 1900. Opposed partition of Bengal (1905). Was on Calcutta Corporation, Legislature of Bengal, and (1913-20) Imperial Legislature, and was president of National Congress in 1895 and 1902. In England 1909 as delegate to Imperial Press Conference. On reversal of partition, B. became moderate; was in England again in 1919; in 1921 retired from editorship of the *Bengali* and accepted a knighthood, but he was defeated at the poll by a Swarajist. Wrote an autobiographical book, *A Nation in Making*, 1925.

Banff: 1. Seaport, royal and parl. burgh, and cap. of Banffshire, Scotland, at mouth of R. Doveron, on the Moray Firth, 50 m. N.W. of Aberdeen by rail. It has woollen, leather, rope, and sail manufs., iron foundries and shipbuilding yards, and is the headquarters of an important fishing industry. There is a considerable export trade. The adjacent tn. of Macduff, with a good harbour, is included in the burgh. Amongst the chief edifices are the co. buildings, the tn. hall, the Chalmers hospital, the academy,

the masonic hall, and the museum. Duff House, presented to the burgh by the late duke of Fife in 1906, contains a fine collection of pictures and an armoury. B. is a place of considerable antiquity, having received its first charter from Malcolm IV. in 1163. The old castle, of which but little now remains, was the bp. of Archbishop Sharp. The modern castle is the property of the earl of Seafield. Pop. 3500. 2. Post-tn., Alberta, Canada, on the Canadian Pacific Itailway, 922 m. W. of Winnipeg and 560 m. E. of Vancouver. It is situated amongst the beautiful scenery of the Rocky Mts. National Park, and is a noted tourist resort. Pop. 2000.

Banffshire, maritime co., N.E. Scotland, bounded on the N. by Moray Firth, on the E. and S. by Aberdeenshire, and on the W. by the cos. of Inverness and Elgin. The surface in the S. is mountainous, the land in the N. being flatter and more fertile. Partly in the co. are Cairngorm Mt. (4085 ft.) and Ben Macdui (4296 ft.). The chief rivs. are the Spey, Avon, and Deveron. The chief lochs are Loch Avon, Loch Builg, and Loch Etebachan. Cattle-breeding is the prin. rural industry. Other important industries are fishing and whisky distilling. The co. tn. is Banff. The other chief tns. are Portsoy, Cullen, Buckie, and Keith. Area, 633 sq. m. Pop. 58,000. Pictish remains are to be found at Rothiemay, Ballindalloch, Boharm, and elsewhere, and mediæval remains at Balvenie, Auchindoun, Findlater, and Keith. The co. was the scene of many conflicts between the Scots and Norse invaders. The co. returns one member to parliament. See W. Barclay, *Banffshire*, 1922.

Bang, Hermann Joachim (1857-1912), Dan. author, b. in the is. of Seeland; educated at the academy of Sorø and at Copenhagen. His novels include: *Haab-løse Slægter*, 1880; *Pædra*, 1883; *Stille Eksistens*, 1886; *Liv og Død*, 1900; and *Mikael*, 1903. Also wrote critical works—as, for example, *Realisme og Realister*, 1879.

Bang, Nina (1866-1927), Dan. Socialist politician, b. at Copenhagen. From 1913 to 1917 she was a city councillor of Copenhagen, and in 1918 was elected a member of the Upper House of the Dan. Parliament. In 1924 she became education minister, being the first woman to hold Cabinet rank in Denmark.

Bangalore, cap. of Mysore state, India, 216 m. by rail W. of Madras, and 70 m. N.E. of Seringapatam. It has a healthy climate, being situated over 3000 ft. above sea level, and is equipped with good drainage and water supply. There is a considerable European settlement, and quite a large number of the inhab. are Christians. It has cotton and other manufs. The fine botanical garden is worthy of note. The tn. was a favourite residence of Hyder Ali. It was captured by Lord Cornwallis in 1791. Pop. 306,500.

Banganapilli, or Banganapilly, tn. in Madras, India, cap. of a state, area 255 sq. m., 89 m. E. by N. of Bellary; pop. 32,000.

Bangar, tn. in La Union prov., Luzon, Philippine Is., 17 m. from San Fernando. It produces alluvial gold, and agric. products such as tobacco, rice, cotton, etc. Pop. 9000.

Bangka, see BANCA.

Bangkalan, see BANEKALLAN.

Bangkok, cap. of Siam, on the Menam, 20 m. from its mouth. The area of the city is about 15 sq. m., and the pop., estimated in 1938, is 681,000, of which about one-half is Chinese. The older part of the city is built on rafts, but there are more streets than formerly and people move about in motors rather than in boats. Most heavy labour is done by Chinese, and trade conducted by Europeans, Chinese, and Indians. Nearly every road has its trams and omnibuses, taxi-cabs, and jinrickshas. The city is the terminus of four railway lines. Huge structures of reinforced concrete are separated by wooden huts. The royal palace is in size a small city. The modern throne hall, about a mile away, is of white marble brought from Italy. There are many Buddhist monasteries. The Chulalongkorn hospital is probably the finest in the Far E.; it has a snake park attached to it. Antidotes are made from their venom. Gambling in B. is prohibited by law. There are sev. hundred second-hand shops for the sale of curios. Fruit gardens supply the city with a bounteous supply of fresh food, including rice, the staff of life, while fish takes the place of meat. The chief exports are rice and teak; the imports, textiles, bullion, and gold leaf. The number of its beautifully coloured temples make B. one of the most picturesque cities in the E. The city suffered severely during the Second World War. It surrendered to the Jap. forces on Dec. 13, 1941. On Jan. 24, 1942, the R.A.F. made a heavy night raid on the city. The power station was completely destroyed, large fires started in the dock area, and much damage was done to the aerodrome. The following day a further raid was made on the docks and commercial centre, starting fires visible for 70 m. After the Second World War B. was the scene of a *coup d'état* by Marshal Pibul Songkram, whose party, the Tharmathapat, seized control of the gov. on Nov. 10, 1947.

Bangor: 1. Episcopal city, seaport, and municipal bor., Carnarvonshire, Wales, on the Menai Strait, 9 m. N.E. of Carnarvon. The chief trade is the export of slate from the Penrhyn quarries. The cruciform cathedral was restored by Sir Gilbert Scott (1869-80). The Univ. College is situated here. Pop. 12,000. 2. Seaport and watering-place, on Belfast Lough, Co. Down, N. Ireland, 12 m. E.N.E. of Belfast. Carries on embroidery and flowering of muslin. Pop. 8000. 3. City and co. seat, Penobscot co., Maine, U.S.A., on the Penobscot R. at its junction with the Kenduskeag stream. Has extensive manufs. of boots, shoes, and clothing, and is one of the chief lumber depots of the U.S.A. Pop. 29,000.

Bangorian Controversy, dispute which

arose out of a sermon preached before George I. in 1717 by Bishop Hoadly of Bangor. In this sermon Hoadly denied the right of the Church to exercise authority over the conscience. The Lower House of Convocation was preparing to take steps against the author of these opinions, when it was prorogued by Parliament for a period of some months.

Bangs, John Kendrick (1862-1922), Amer. author, b. at Yonkers, New York; educated at Columbia Univ. He was editor of *Harper's Magazine*, *Literature*, and *Puck*. Author of many novels, prin. of which are: *Tiddledywinks Tales*, 1890; *The Tiddledywink Poetry Book*, 1890; *Three Weeks in Politics*, 1894; *Mr. Bonaparte of Corsica*, 1895; *A Houseboat on the Styx*, 1895; *The Idiot at Home*, 1909; *Mrs. Raffles*, 1905; *Autobiography of Methuselah*, 1909; *The Real Thing*, 1909; *Andiron Tales*, 1908; *Echoes of Cheer*, 1912.

Bangweolo, or **Bemba**, lake, N. Rhodesia, 3700 ft. above sea level. Area of open water, about 1670 sq. m. in dry season. It is said to be nowhere deeper than 15 ft. It was first discovered by Livingstone in 1868.

Banialuka, tn. in Yugoslavia, situated on the R. Verbas, about 60 m. S.E. by E. from Novi. Pop. 15,000.

Banian Days, originally a sailors' name for the days when meat was not served to the crew. The phrase has now come to be applied to any period of indifferent feeding. The expression owes its origin to the abstention from meat practised by the Bs., a class of Hindu merchants who were a caste of the Valsya, who, on religious principles, abstain from meat. It is estimated that there are over 3,000,000 of them scattered over various parts of Asia.

Banias, vil. in Palestine, on the site of the ruins of Paneas, afterwards Caesarea Philippi. It is situated near the sources of the Jordan, at the foot of the Anti-Libanus (Jebel Helish), the Mt. Hermon of Scripture, and is 45 m. W.S.W. of Damascus. The tn. came into prominence during the time of the crusades, about the thirteenth century, when the castle of B. was built, the ruins of which may still be seen.

Banim, John (1798-1842), Irish novelist, poet, and dramatist, b. in Kilkenny, where his father was farmer and trader. He was educated at Kilkenny College, and studied at the academy of the Royal Dublin Society. In 1820, after sev. years of ill health and disappointment, he settled in Dublin, ultimately abandoning art for literature. In 1821 the production of his tragedy, *Damon and Pythias*, brought B. fame and money, and in 1822, he and his brother Michael set about the writing of a series of Irish tales on the lines of Scott's Waverley novels. Their *Tales by the O'Hara Family* (1st series, 1825; 2nd series, 1826) won popularity. He was granted a civil list pension in 1836. Amongst his other works is the novel *The Boyne Water* (1826), also a book of essays entitled *Revelations of the Dead Alive* (1824), the tragedies of *Turgustus*

and *Sylla*, and the poem *The Celt's Paradise* (1821). See P. J. Murray, *The Life of John Banim*, 1857.

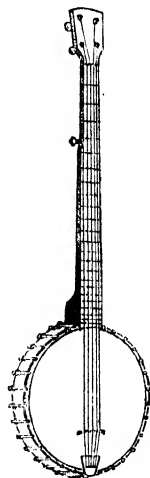
Banim, Michael (1796-1874), elder brother of John B., and joint author of *Tales by the O'Hara Family*, was originally intended for the law, but was compelled to renounce his studies owing to his father getting into financial difficulties. Like his brother, he was the victim of ill health, and in his latter years lived in reduced circumstances. His was probably the greater share in the delightful *Father Connell* (1842), while he was sole author of the following tales among others: *The Croppy* (1828); *The Ghost Hunter and his Family* (1833); *The Mayor of Windgap* (1835); and *The Town of the Cascades* (1864).

Banishment, term derived from the old word *ban* (see BAN). In primitive society B. meant the exclusion of an individual from the protection of the law and the benefits of society, a sentence of outlawry which also involved the confiscation of his property. In more recent times the word has come to mean expulsion from a country or place in punishment for crime. In England B. seems first to have been introduced as a punishment in judicial procedure in a statute of Elizabeth's reign, and in the form of transportation the practice received the sanction of Eng. law until far on in the nineteenth century.

Banister, see BALUSTER.

Banjermasin, or **Bandermassin**: 1. Dist., Dutch Borneo, intersected from N. to S. by mts., and watered by the Banjer and other rivs. Rice is grown, and the region also produces gold, diamonds, gum, wax, spices, etc. The pop. is composed mostly of Dyaks. 2. Tn., cap. of Dutch Borneo, on the Martapura, near its junction with the Barito. B. is largely built on piles. There is an extensive trade in the products of the locality. Pop. 16,700. 3. Riv. in S.E. Borneo. It is navigable for about 50 m. from the sea.

Banjo (negro corruption of the word *bandore*, derived from Gk. *pandora*, a musical instrument with three strings), stringed musical instrument, played with the fingers, often without frets to guide the stopping. It consists of a long neck, on which are the tuning-pegs, and a drum-like vellum body, and has from five to nine strings. It was introduced into America by the Negroes. The pitch is one octave lower than the written notes.



BANJO

Banka, or **Mengka**, tn. on the Is. of Formosa. It is in a tea-growing dist., and its port is Tamsui. Pop. 45,000.

Bankallan, or **Bangkalan**, tn. of the Dutch E. Indies, on the coast, near the W. end of Madura Is. Pop. 14,000.

Bankers' Association of America was founded in 1875 to include all the prominent banks of the U.S.A. In 25 years' time it had a membership of over 21,000, which meant over 90 per cent of the nation's banking power. Every year the association holds a convention at which all the leading bankers are present, and at which subjects of importance to the banking world are discussed, and recommendations for courses of future conduct are given. To commemorate the golden anniversary of the association, an educational foundation of 50,000 dols. was completed in 1927, with the object of furthering banking and financial scholarship and research in colleges. The official organ of the association is the *American Bankers Association Journal*, a monthly magazine. The headquarters are at 110 E. 42nd Street, New York city.

Bankers, Institute of, founded 1879, is an association of men and women connected with various branches of banking. Its objects are to facilitate the consideration and discussion of matters of interest to B.; to afford opportunities to its members for the acquisition of knowledge; and to take measures which may be desirable to further the interests of banking. This it does in part by the arrangement of lectures on banking, mercantile law, political economy, and other subjects, and partly by the issue of certificates to those who pass the examinations approved by its council. The ordinary meetings of the institute are held in London from Nov. to May, and the papers read and discussed are pub. in the institute's *Journal*. There are local centres of the institute in the chief provincial tns. of England and Wales. Its fellows, associates, and ordinary members number over 30,000. London address, 11 Birchin Lane, E.C.3.

Bank Holidays, first estab. by Sir John Lubbock's (Lord Avebury) Act of 1871. B. H. in England and Ireland are Easter Monday, Whit Monday, the first Monday of Aug., Dec. 26 (Boxing Day), or if that day falls on a Sunday, the 27th, Christmas Day, and Good Friday. In Ireland Mar. 17 is also a B. Holiday. In Scotland B. H. are Christmas Day, New Year's Day, and the first Mondays of May and Aug. On these days banks are closed, bills and notes due on such days becoming payable on the next day, except in the case of Christmas Day and Good Friday. Bills, etc., due on these two days are payable on the preceding day.

Banking, see BANKS.

Bank Note. The machinery and processes for printing B. Ns. and other forms of securities employed in London were for a long time more developed there than elsewhere in the world. Orders for this kind of work still come to London from all the important countries of the world except the U.S.A. The U.S.A. have

improved on Brit. methods, and the best machinery now comes from that country. The engraving and printing of B. Ns. is a peculiarly Brit. industry; Waterlow's have carried on the business from 1811 to the present day, De La Rue's from 1815, and Bradbury, Wilkinson from 1855, and in all of these firms the staffs include men who have inherited their skill from their grandfathers and fathers before them. The business requires organisation of safeguards against forgery and other forms of fraud. Every attempt of the forger adds something to the knowledge of the B.-N. printer. In these days it is the camera and photo-mechanical processes to which the forger usually resorts, and the B.-N. printer has to thwart these efforts with finer and more closely engraved lines, more intricate designs and complicated colour combinations. The actual machinery and methods of engraving and printing are in themselves strong safeguards, for the machines are altogether different from those used in ordinary printing. A geometric lathe of extremely intricate mechanism is used for engraving interlacing patterns on B. Ns. The designs are obtained by combinations of gearing and pattern wheels, and without having possession of the key figures to the combination, no one could make a repeat. This is a Brit. invention, but is now also made in the U.S.A., as is also the transfer press for impressing the engraved designs into the steel printing plates. It was originally invented by Jacob Perkins, who came over to this country to exploit it and founded a firm which to-day is chiefly occupied in postage-stamp printing. Any person outside the recognised B.-N. printers who should attempt to buy such machines would not only at once be under suspicion, but would have to give proof of his *bona fides*. The machine for printing from the steel plates have been gradually evolved from the first crude handpress, which was practically a mangle, for printing from flat plates, the inking, wiping, and application of pressure being done by hand. A Frenchman, named Guy, first constructed a machine for automatic, or semi-automatic, inking and wiping, originally for flat plates and afterwards for rotary printing for curved plates, Guy's machines were shown at the Paris Exhibition of 1874, and one was purchased by Bradbury, Wilkinson, who later installed a more elaborate machine made by Voisin of Paris. The machines used at the present day are designed and manufactured by the firms using them, and the features of the design are jealously guarded. See also BANKS.

Bank of England. The, owes its origin to the scheme of William Paterson (q.v.) for meeting the expenses of the Fr. war which followed the revolution of 1688. Other and rival schemes were proposed, but Paterson's was eventually accepted by Montagu, chancellor of the exchequer. Briefly, the scheme was that in consideration of £500,000 subscribed by some 40 merchants towards the sum of £1,200,000 lent to the Gov., the subscribers were to be made a corporation

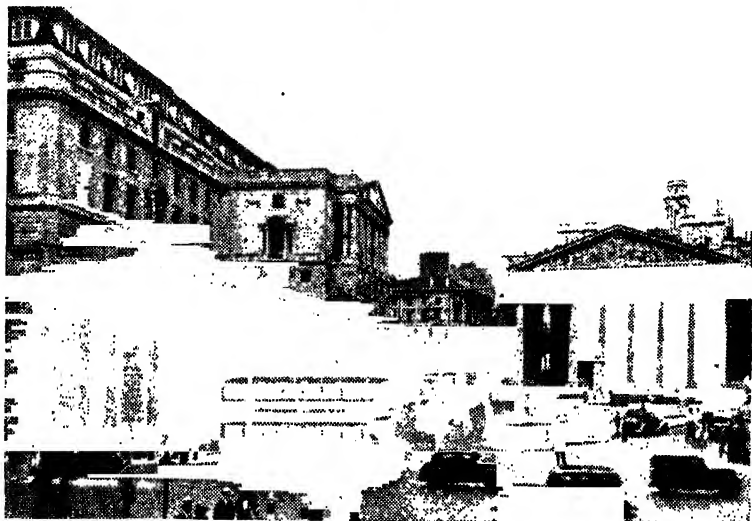
under the title of the Governor and Company of the B. of E. The B. of E. still remains the most famous in the world and at the same time 'the most original bank in the world.' Its importance to the Gov. and to the Eng. nation is obvious from a consideration of the loans made to William III. and Queen Anne which enabled England to regain that position among European nations which she had then to all appearance lost. The gov. of the day sought the B. of E.'s assistance on the eve of all the eighteenth-century wars, and on the day of reckoning which followed the futile transactions of the Land Bank and of the S. Sea Bubble. Further, not only the establishment of public credit by the formation of the permanent debt, but the organisation of the floating debt and even the conversion of the national debt, are, in the main, the work of the B. of E., and in return for these services the Gov. has always defended the interests of the B. of E. in times of stress. It may be said that a true understanding of the position and transactions of the B. of E. during the first 3 decades of its existence can be obtained only by the study of the political events contemporaneous with its creation, and also of the banking operations of London goldsmiths. For the B. of E. was really created for political reasons, and from the outset it was distinguished from other European banks by certain characteristic features introduced into banking operations by the goldsmiths, so that a comprehensive list of the B. of E. necessitates a study of the business methods of the goldsmiths as exchangers and as discounters of bills and loans at high rates of interest. So successful had they become that large sums were deposited by the citizens generally, and receipts were given for these deposited savings which circulated better than the actual coins whose scarcity they not seldom supplied. Thus goldsmiths' notes are to be regarded as the earliest form of bank notes in England. It is therefore not surprising that the goldsmiths offered some opposition to Paterson's proposal. There was also opposition from the Tories, who declared that a State bank would be one step towards a republic; while certain Whigs opposed it on the ground that it would lead to an absolute monarchy, inasmuch as the king could then escape the financial control of Parliament; while yet others feared that the Tonnage Bank—as it was nicknamed from the fact that the scheme of the new bank was included in the Tonnage Bill of 1693—would absorb all the money in the kingdom and subject commerce to usurious exactions. But political necessity decided the matter, and the above-mentioned Act was duly passed for 'granting to their Majesties sev. Rates and Duties upon Tunnages of Ships (and) for securing certain Recompenses and Advantages to such persons as shall voluntarily advance the Sum of Fifteen hundred thousand pounds towards carrying on the war with France'; and, after various articles referring to the imposition of taxes, the Act authorised the raising of

£1,200,000 by subscription, the subscribers forming a corporation to be called 'The Governor and Company of the Bank of England.' Sir John Houblon was the first governor with Michael Godfrey, deputy-governor, and a court of 24 directors. The subscription list was opened at the Mercers' Chapel, June 1694, and proved a great success. The corporation was to lend the whole of its capital to the Gov. and to be paid interest at 8 per cent; and to be paid £100,000 per annum for expenses. The corporation was also to have the privileges of a bank for 12 years, the Gov. reserving the right of annulling the charter after giving 1 year's notice. The corporation was not authorised to borrow or owe more than its capital and, if it did, the members became personally liable in proportion to the amount of their stock. The corporation was not to trade in merchandise, but could deal in bills of exchange, gold or silver bullion and sell any wares on which it had lent money. The B. was started on condition that a certain sum should be lent to the Gov., but the increase in the following years was due to further loans to the Gov. of the day, and, in return, the B. obtained renewals of its charter and also other advantages. The influence of the B. during the eighteenth century was far greater than in the present day, for, at that time, the large issues of notes made it a very formidable opponent of London bankers. It became the chief factor in the money market, and therefore fixed the price of the loan capital. This was so because it was then the only joint-stock bank in existence, and, as such, held large deposits in comparison with the private banks. The rate of interest fixed by it became the market rate, and, at the present time it remains so, but to a less degree, as London banks have, to some extent, abandoned the method of allowing interest on deposits to be governed by the bank rate. The gold reserve of the country is largely under the control of the B. of E., and it is able to replenish that reserve when the necessity arises—other things being equal. The B. of E. is, in fact, the only institution where large amounts of gold can be obtained in order to meet home and foreign demands, and its position as a bank of discount is very often impeded, since the rate of interest is advanced in order to prevent the reserve of gold from getting too low. The business of the B. of E. consists of 3 divs.: (1) the management of the national debt; (2) issue of bank notes (the Bank Act of 1844 divided the issue from the banking dept. and from that date the 2 offices were kept distinct); (3) Gov. and private banking. The B. of E. carried on its business in Grocers' Hall until 1732. Its present building in Threadneedle Street, London, which has recently been enlarged, was erected from the designs of Sampson (1734), Sir Robert Taylor (1776–81, 1783), and Sir John Soane (1788). A 'Bank Guard' is furnished every evening by the battalion of Guards on duty. This practice dates from the attack on the B. during the Gordon riots in 1780. There are country

branches at Birmingham, Bristol, Hull, Leeds, Liverpool, Manchester, Newcastle, and Plymouth.

B. of E. Nationalisation Act, 1946. Passed by the third Labour Gov. with the aim of bringing the capital of the B. of E. into public ownership, and the B. under further control and to make provision respecting relations between the Treasury, the B. of E., and other banks. Under the Act the whole of the B. stock was transferred to Treasury nominees 3 months after the passing of the Act. It is provided that the Treasury shall issue

the Treasury and the B. The new court of directors consists of a governor, deputy-governor, and 16 directors (8 fewer than previously) appointed by the Crown. The governor and deputy-governor hold office for 5 years, the directors for 4, and all are eligible for reappointment. On the day the Act came into operation all the existing directors resigned, and of the first directors who took office 4 were appointed for 1 year only, 4 for 2 years, and 4 for 3 years. Members of Parliament, persons holding offices of profit under the Crown, aliens,



Valentine & Sons, Dundee

THE BANK OF ENGLAND AND THE ROYAL EXCHANGE, LONDON

to stockholders in exchange 3 per cent Gov. stock, the amount to be issued to any stockholder being such that the ann. interest is equal to the average ann. gross dividend declared during the 20 years to Mar. 31, 1945. The amount of the capital stock outstanding then being £14,553,000 and the average ann. gross dividend during the previous 20 years having been 12 per cent, the nominal amount of Gov. stock to be issued in exchange for B. stock was £58,212,000 (£400 for every £100 of B. stock). The Gov. stock is to be perpetual, but may be redeemed at par by the Treasury on or at any time after Apr. 5, 1966. No dividends are to be declared by the B. after the passing of the Act, but, instead, the B. will pay to the Treasury £873,180 half-yearly (i.e. the equivalent of 3 per cent interest on the above total of Gov. stock) or such lesser or greater sum as may from time to time be agreed upon between

and persons disqualified under the B.'s charter, are excluded from appointment. Only 4 of the directors may be employed whole time by the B. The Act also provides for the drawing up of a new charter. The Treasury may give directions to the B. from time to time, but subject to such directions, the affairs of the B. are managed by the court of directors in accordance with the charter. The B. may, if they deem it necessary, in the public interest, request information from, and make recommendations to, bankers (i.e. any person carrying on a banking undertaking and declared by the Treasury to be a banker) and may, if so authorised by the Treasury, issue directions to any banker for the purpose of securing that effect is given to any such request or recommendation. The new court took office from Mar. 1, 1946. Lord Catto continued as governor, and all the directors were members of the former

board except Brig. R. Brook, an economist, who served in the war as director of resistance in W. Europe, and was after on F.-M. Montgomery's staff: Mr. George Gibson, former chairman of the Trades Union Congress General Council and a member of the National Investment Council; and Lord Piercy, chairman of the Industrial and Commercial Finance Corporation. *See also* BANKS and BANKING; CURRENCY; DEBT CONVERSION; MONEY; PUBLIC DEBT.

Consult John Francis, *The History of the Bank of England*, 3rd ed., 1848; W. J. Lawson, *History of Banking*, 2nd ed., 1855; F. G. H. Price, *A Handbook of London Bankers*, 1876; J. E. Thorold Rogers, *The First Nine Years of the Bank of England*, 1887; A. Andréades, *History of the Bank of England, 1640-1903* (trans. by C. Meredith), 1909; Sir J. H. Clapham, *The Bank of England* (2 vols.), 1938.

Bank Rate, the advertised official minimum rate at which the B. of England will discount approved bills of exchange-maturing at not more than three months—or grant short loans. The B. R. is generally somewhat above the current market rate or rate which is generally charged to the bank's customers. The rate is fixed by the bank directors at their weekly meeting and announced every Thursday. The object of raising the B. R. is to attract more gold to the country; while lowering the rate makes borrowing easier and tends to draw gold to centres where higher interest is to be earned. The rates, whether for loans, deposits, or discounts, of all other banks in the country are, generally, regulated according to the B. R. The changes in the B. R. in the past few years have been as follows:

Year	No. of Changes	Highest	Lowest
1914	8	10	3
1915	None	5	5
1916	1	6	5
1917	2	6	5
1918	None	5	5
1919	1	6	5
1920	1	7	6
1921	4	7	5
1922	4	5	3
1923	1	4	3
1924	None	4	4
1925	4	5	4
1926	None	5	5
1927	1	5	4.5
1928	None	4.5	4.5
1929	5	6.5	4.5
1930	4	5	3
1931	6	6	2.5
1932	7	6	2
1933-38	None	2	2
1939	3	3.88	2
1940-45	None	2	2
1946	None	2	2
1947	None	2	2

The B. R. is looked upon as a useful weapon against an ill-balanced expansion of business. In Great Britain the rate has, with slight variations on the outbreak of war in 1939, stood at 2 per cent

since 1933—an indication that the Gov. still holds to the policy of cheap money. B. R. is, in fact, a smooth, certain, and speedy check on an undue expansion of business activity as compared with the system of restriction.

'The real importance of a variation in the minimum rate of the bank does not consist in the power exercised over, but in the indications afforded of, the money market. The fixity of the minimum rate has this effect; that practically it becomes a maximum to the public. Persons in good credit are almost always able to procure money a fraction under the bank rate, and consequently the Bank of England is generally the last to feel the pressure of a rising demand' (Goschen, *The Theory of Foreign Exchanges*).

Bankruptcy. In England and Wales a bankrupt is a person who declares, or by his conduct makes it manifest, that he is unable to pay his debts, and whose property is accordingly distributed among his creditors under the B. laws. In its original signification the term bankrupt meant a trader who hid himself or did other acts tending to defraud his creditors. The term insolvent, which in one sense connotes any person who is unable to pay his debts, in a more restricted sense meant a non-trader who sought the benefits of the Insolvency Acts. Since 1861, bankrupt includes both traders and non-traders, and our whole modern law of B. applies indifferently to both. Insolvency now connotes the condition of a debtor who is unable to pay his debts but who has not been 'adjudged.' B. legislation dates from the time of Henry VIII., the most notable Act being that of 1825, which introduced the principle of deeds of arrangement as an alternative to B., subject to very severe restrictions. In 1869 all the previous statutes were repealed and a 'trustee, in whom the property of the bankrupt was to vest, was substituted for the old 'official assignees.' The present law of B. rests on the general Acts 1883 and 1890, and various measures dealing with procedure, all of which Acts were repealed and substantially re-enacted in the Consolidating Act of 1914. The purpose of the Acts of 1883 and 1890 was to secure that the property of a person who could not pay his debts in full should be divided ratably among his creditors, and that the debtor should then be freed from his debts either absolutely or conditionally. According to the present law, proceedings may be instituted by the debtor or by the creditors: in the former case the B. is called voluntary, in the latter involuntary. The claim of the creditors must amount to £50. On the petition being presented, the property of the debtor is taken over by an official receiver, who is an officer of the Board of Trade, and the debtor must make a full statement of affairs on oath in public, after which the creditors hold a meeting to determine whether the debtor shall be adjudged bankrupt or whether a composition can be arranged. Such a composition must be approved by three-fourths in value of the creditors, and must

receive the sanction of court. If, however, the debtor is adjudged bankrupt, the creditors appoint a trustee to distribute his estate, under the supervision of a committee of inspection. The debtor is liable to imprisonment if he refuses to assist in the discovery of his property or conceals his goods from the trustee. After the distribution of his property among the creditors the bankrupt may obtain a discharge from the court, but the discharge is withheld under certain conditions: if he (1) has not kept proper books within 3 years before B.; (2) has traded after knowledge of insolvency; (3) has lived extravagantly or speculated rashly; (4) has been previously bankrupt; (5) has contracted debts without expectation of being able to pay them; (6) has given preference to any creditor within 3 months before B. By the B. Act of 1883 the procedure was simplified in the case of persons with property less than £300, when the official receiver became trustee, and there was no committee of inspection. The jurisdiction was transferred by this Act from the Court of B. to the High Court of Justice; it also provided for persons dying insolvent, the administration of whose property could formerly only be dealt with by a suit in chancery.

B. proceedings are now conducted under the B. Act of 1914, and the rules made thereunder as amended by the B. (Amendment) Act of 1926. By this Act previous statutes were consolidated and certain changes were made, chiefly in the direction of increasing the stringency of conditions and placing on the debtor the onus of proving himself not guilty of fraudulent intent. The jurisdiction under Debtors' Act, 1869, to commit debtors is now transferred to the B. court, which has power to make a receiving order instead of committing the debtor. An undischarged bankrupt is now guilty of a misdemeanour, the official receiver having the power to institute and conduct proceedings if he (1) either alone or jointly with another person obtains credit for £10 or over from any person without informing that person that he is an undischarged bankrupt; (2) engages in any trade under a name other than that in which he was adjudicated bankrupt without disclosing to all persons with whom he trades the name under which he was adjudicated bankrupt; (3) has contributed to or increased the extent of his insolvency by gambling or hazardous speculation within 2 years of his petition; (4) fails on request of the official receiver in course of public examination to account for the loss of any substantial part of his estate incurred within a year before petition or to give a satisfactory explanation of the manner in which loss was incurred. An undischarged bankrupt must reveal his position when asking for credit; if he thinks such knowledge has been given to the creditor when it has not, he has no defence. General assignments of book debts not collected before B. become void unless registered as bills of sale, but this does not apply to a specific debt assigned.

A bankrupt is disqualified from holding office of (a) member of Parliament; (b) justice of peace; (c) mayor, alderman or councillor; (d) co. councillor; such disqualification to cease if and when the adjudication of B. is annulled or the bankrupt obtains discharge with a certificate to the effect that B. was due to misfortune. An undischarged bankrupt may apply for discharge if his assets were more than 10s. in the £, if no criminal intent has been proved. A discharge order releases him from all obligations with certain exceptions, such as debts to the Crown, etc.

In Scotland a bankrupt is liable to the distributing process known as sequestration. A 'notorious bankrupt' corresponds to a person who has committed what is called in England an act of B. There is no separate court of B., the jurisdiction being assigned to the sheriff of a co. or to the bill chamber of the court of session. The procedure closely resembles that in England. See also *INSOLVENCY*. Consult Ringwood, *Principles of Bankruptcy*.

Banks, Elizabeth, Amer. authoress, b. Taunton, New Jersey. Began journalism as a society reporter on Baltimore papers, but later went to Peru as secretary to the Amer. minister there. She lived in England the greater part of her life. Author of essays entitled *The Lady at the Round Table* in the *London Referee* under the pen-name of 'Enid,' and of serial stories under the pen-name of 'Mary Mortimer Maxwell.' Other books: *A Dog of Belgium*, 1914; *On the Boat that Uncle Sam Built*, 1917; *School for John and Mary—A Story of Caste in England*, 1925. Her autobiography was pub. under the title *The Remaking of an American*, 1932. She d. in 1938.

Banks, Sir Joseph (1743-1820), Eng. naturalist and explorer, b. in London. In 1766 he made a botanical expedition to Newfoundland. From 1768 to 1771 he accompanied Cook in his voyage round the world on the *Endeavour*, and his journal proved an important source of information. In 1772 he made a trip to the Hebrides and Iceland, and was instrumental in bringing to the general notice the marvels of Staffa. He formed a valuable collection and library, which he bequeathed to the Brit. Museum. In addition to various scientific articles, he wrote *A Short Account of the Causes of the Diseases called the Blight, Mildew, and Rust*, 1805; and *Circumstances Relative to Merino Sheep*, 1809.

Banks, Nathaniel Prentiss (1816-94). Amer. politician and general, b. at Waltham, Massachusetts. After being a factory worker and the editor of a local paper, he studied law and was admitted to the Bar. After a period of service in the Massachusetts legislature, he was in 1853 elected to Congress, where for some time he was speaker of the House. From 1857 to 1859 he was governor of Massachusetts, and later became president of the Illinois Central railroad, which position he relinquished on the outbreak of the Civil war, when he joined the Federals.

He was defeated by Jackson at Fort Royal, and was later beaten at the battle of Cedar Mt. In 1863 he captured Port Hudson, but after his defeat at Sabine Cross Roads in 1864 he was relieved of his command. He re-entered Congress in the same year, and served as chairman of the committee on foreign relations. A mental disorder brought about his final retirement from public life in 1891. He was popularly known as the Bobbin Boy, in allusion to his early factory career.

Banks, Thomas (1735 - 1805), Eng. sculptor, b. in Lambeth, London. Apprenticed at the age of 15 to a wood-carver he studied sculpture in the evenings under Schemmachers. He continued his studies at the Royal Academy, where, in 1770, he gained the gold medal. In 1772 he gained a travelling studentship and went to Rome. He did not return to England until 1779, his marriage to Miss Wooton, a lady of considerable means, rendering him independent. In 1781 he proceeded to Russia, where he gained the favour of Catherine II., who purchased his 'Cupid catching a Butterfly' and 'Caractacus and his Family before Claudius.' He was elected a member of the Royal Academy in 1785.

Banks and Banking. The term bank (derived from Fr. *banque*, a money-changer's bench or table) is applied to various forms of establishments which deal with money, including not only those institutions to which it more strictly applies, dealt with in this article, but also the great merchant and financial houses, discount businesses, and the like. Banks have been classified into banks of issue, i.e. those which have the right to issue their own notes, and banks of deposit, those which receive money from their customers. Another classification divides banks into private banks, those whose capital is owned by a limited number of partners, in Eng. law not more than ten, and joint-stock banks, where the shares are owned by a corporate body. For practical purposes the Bank of England is the only Eng. bank of issue, and the notes of those banks which still preserve the right of issue are but rarely seen. The Bank of England notes are legal tender in England except at the bank itself. Though the bank-note is of the greatest importance in regard to the reserves held against deposits by the banks, and so ultimately in regard to the gold basis of our credit system, the cheque is the medium by which business transactions of every kind are now carried on. A bank, usually a joint-stock company, and with capital found by its shareholders, receives the money of its customers, either on deposit, i.e. only to be withdrawn after certain notice, or on current account, i.e. to be withdrawn on demand, during business hours. On deposit accounts interest is allowed, on current accounts usually none. The Bank of England allows no interest on deposits. These deposits, whether on deposit or current accounts, are the bank's liabilities, which it must be prepared to meet with cash on demand, and though in theory the

liabilities might all be drawn upon at one moment, the system is based on experience that except in times of panic they never are. Thus the accumulation of deposits can be used by the bank for its own profit in financing the business and trade of the country, and expanding the credit on which it is built up. A glance at the yearly or half-yearly balance sheet of one of the great joint-stock banks will show the kind of business which is done by them. On the debit side will be found the paid-up capital of its shareholders, i.e. the original working capital, the reserve fund, the accumulation of profits not paid out in dividends; then will follow the largest item, the deposit and current accounts of its customers, which form the bank's liabilities, and the profit and loss account. On the credit side comes first the cash; (1) Gold and notes in the tills, ready for the ordinary day-to-day drawings; these are normally small in amount, owing to the use of cheques; (2) cash held by the bank at the Bank of England, which, as the bankers' bank, is the centre of the Eng. banking system. Cash held at the Bank of England appears as 'other deposits' in the weekly bank return. Next upon the credit side appears the item 'loans at call or short notice'; these are day-to-day or weekly advances made chiefly to the brokers of bills of exchange at a low rate of interest. The largest amount is found in the item 'bills discounted and advances.' Not only do the banks discount bills themselves, but they finance by advances the merchants who confine themselves to that business; thus the banks play an important part in the supplying of credit to the trade and industry of the country, for it is the bill of exchange (q.v.) which is the prin. medium of the supply of credit. 'Advances' also include the loans made by the bank to its customers, on securities of all kinds, from the large sums advanced to corporations, companies, bill-brokers, and discount houses, or to members of the Stock Exchange for dealings in shares, to the loans made to ordinary private persons on securities lodged with the bank or as overdrafts on personal security or guaranteed by a third person. The value of the bank's premises and investments made by it in the highest form of securities close the credit side of the balance sheet. An examination of a bank's balance sheet will show that the deposit and current accounts, its liabilities, amount to perhaps 6 or 7 times that of the cash in hand or at the Bank of England, and the balance will be chiefly found in the sums lent either at call or short notice, on bills, or in other advances, and sound banking depends on these advances being promptly repaid and securities easily and at all times readily realisable in cash. A bank has always to be prepared for a panic, and it is always faced by this problem: if too much is laid up in cash reserve against its liabilities, there will be so much less available for making its own profits and for the financing of trade and industry; if too little, at any moment it may be called on to pay more than it can command in cash at

once, with the consequence of realising its securities at heavy loss or of even suspending payment. The cash reserves of a bank are, as already mentioned, the gold and notes in its tills and the reserve at the Bank of England, which is, in turn, a credit in the books of the bank, capable of being drawn on in gold or notes also. The ultimate reserve, therefore, is gold; for, as will be shown, the note issue of the Bank of England is restricted by law and depends on the gold held by it, except when the Bank Act is 'suspended.' A control is kept by the banks, therefore, on the expansion of credit by the varying rates of discount allowed in the money market, so that some equilibrium is kept between their liabilities and their reserves (*see MONEY*). Of all the business done by the banks, a very small proportion is carried on in gold or notes, for the commercial currency in, for instance, the United Kingdom and the U.S.A., is the cheque. The enormous amount of business done by the interchange of cheques is carried through not by paying in or out of notes and gold, but by book-entries in the various banks through the clearing house (*q.v.*). The various banks at the clearing-house day by day balance all the cheques out and in against each other, and the differences are settled between them by a corresponding alteration in their accounts at the Bank of England, which is their common banker, and is not a member itself of the clearing-house. Similarly, when a loan or an advance is made by a bank, it usually consists of an entry in the bank's books, giving a credit against which the person to whom it is given has the right to draw cheques. Thus on a comparatively small capital of its own, with cash perhaps amounting to one-seventh of its liabilities, an estab. bank does its work of providing the readiest way of settling a vast vol. of transactions, and of providing the credit necessary to finance these transactions with a currency which, though not actually paid in gold, is payable in gold. Some idea of the vol. of business done can be gained from the fact that the ann. amount dealt with at the London clearing-house reaches some sixteen thousand millions. As the keeper of the gold reserve, on which ultimately this vast business is built, and as the bankers' bank, the central figure is the Bank of England. (For a more detailed hist., *see BANK OF ENGLAND*.) The Bank of England is first of all the Gov. bank, receiving all revenue payments, and paying the dividends, etc., to holders of Gov. stock. It is the agent of the Gov. in the financing of Treasury and Exchequer Bills, and in other ways is the right hand of the Gov. in the financial side of its administration. It is the only bank whose notes are legal tender, i.e. must be taken in payment of a debt. It is, for all practical purposes, now the only note-issuing bank in England. The Bank of England is regulated by the Bank Charter Act, 1844, and by the Bank of England Nationalisation Act, 1946. The Bank Charter Act limited the note issue of all other banks in England and in Scotland and Ireland, but allowed

the last 2 to exceed this, on an equivalent of gold for every note in excess. The monopoly of note issue in London and the 65-m. radius, granted in 1826, was retained, and no new bank could obtain the right; the result has been that many banks have allowed their note-issuing rights to lapse on opening offices in London, or from amalgamation with London banks. The Act separated the issuing and the banking depts. of the Bank of England. It could issue notes up to £14,000,000, being the amount of its loans to the Gov. at that date, this is the 'fiduciary' issue; above that amount the bank must hold an equivalent in gold coin or bullion. The bank is obliged to make a weekly return, reporting its financial position. This is issued every Thursday, and will be found in *The Times* and other papers on the Friday following.

Most of the notes in circulation are held in bankers' tills as their immediate day-to-day cash transactions require. The notes held by the Bank of England in its banking dept. are the first line of defence against its prin. liability, that of 'other deposits,' which include the other banks' reserve, figuring in its balance sheet as 'cash at the Bank of England.' This with the bullion and coin are the Bank of England's reserve. In time of panic the banks will naturally draw against their deposits, and the Bank of England, not having an unlimited note issue, has to appeal to the Gov. to suspend the Bank Act. This has only been done in 1847, 1857, and 1866, and only in 1857 has an actual excess of notes been issued. The item on the debit side of the banking dept. termed the rest, is the equivalent of the reserve in other banking balance sheets, viz. the undivided surplus of profits; this is never allowed to fall below £3,000,000. The Bank of England rate, termed the bank rate, is the official *minimum* rate of discount at which the bank will discount bills; it is usually above that of the discount obtainable for money in the open money market; but if there is a shortness of cash, the tendency is for the open rate to equalise with the bank rate. *See also* BANK RATE, EXCHANGE, and MONEY MARKET.

Banker and Customer. The Eng. law affecting the relations between banker and customer is that of debtor and creditor, as was laid down in the House of Lords in *Foley v. Hill*, 1848, 2 H. of L. 28. The banker is not a trustee, responsible to the depositor for the way in which he uses his money, and the banker keeps what profit he may make with the money deposited. If the bank stops payment, the depositor ranks with the other creditors. If he has not used his account for 6 years and there has been no payment of interest or repayment by the bank of any part of the deposit or no acknowledgment in the meantime, the debt is statute-barred. A banker is obliged to honour a customer's cheques provided only that there are sufficient funds to his credit, and is liable for damages without proof of actual injury or loss if he dishonours cheques. This liability holds good only between the

banker and the drawee of the cheque, and the person in whose favour the dishonoured cheque has been drawn has no right against the banker. The banker's authority to pay money on cheques is ended by the customer's death, insanity, or bankruptcy, or by notice of an act of bankruptcy. A customer may by order revoke the authority to pay cheques or a particular cheque, but such order must be in explicit terms. A garnishee order against the funds of a customer at a bank attaches to all the funds, and a banker may not pay on any cheques drawn by the customer, even if the amount of the judgment is exceeded by the funds. Valuables, such as plate, etc., deposited by a customer for safe custody with a banker, are not in the same position as funds deposited. The banker acts as a bailee, and they cannot be taken by the banker as set-off against a debt due from the customer, nor, in the case of the failure of the bank, do they rank with the bank's assets; the banker is liable for loss through negligence on his part, and they can be recovered from the banker after any lapse of time. The deposit of valuables for safe custody differs from the deposit of securities, for on these last the banker has a lien, which covers also all cheques and bills paid in for collection by the customer. The banker can retain all such against his customer's debt, and may realise the securities. This banker's lien can, of course, only be exercised where there is no agreement between him and the customer to the contrary, or where goods are deposited only for safe custody or money is paid in to meet particular bills. Further, a banker may not alter any system of dealing which has been recognised as holding good between him and the customer without due notice. If securities have been deposited as cover for a specific loan, the banker's lien terminates when the loan has been repaid. An overdraft or advance is arranged by agreement, and interest may be charged; a customer, drawing a cheque when there are not sufficient funds to meet it, makes an implied request for an overdraft, which the banker may refuse by dishonouring it. Much of the law affecting banker and customer is that which relates to cheques, bills of exchange, and other negotiable instruments. Finally, a banker is bound to keep secret all matters relating to his customer's account, unless authorised to reveal them or compelled to do so by law. See J. Paget, *Law of Banking* (4th ed.), 1930, and H. Hart, *Law of Banking*, (4th ed.), 1931.

General Hist. Clay tablets have been found in Babylonia and Assyria showing some of the functions of the banker, such as money-changing, advances, and the like; we also know from the code of Hammurabi that payments were made through a banker and by drafts against deposits. Deposits bearing interest, letters of credit, and other means of transferring credits from one place to another were also known in ant. Greece and Rome. The Chinese are said to have had a paper currency about A.D. 800. But though it is possible

to trace the evolution of banking, especially in Italy during the Middle Ages, continuously from early times, it is now accepted that the first public 'bank,' properly so called, was the Banco di Rialto, estab. at Venice by Acts of the Senate in 1584 and 1587. In 1619 the Banco del Giro was founded; this became the only public bank in the state, and was long famous as the Bank of Venice. Banking in Venice developed out of the money-changers and private exchange bankers, who as early as 1318 seem to have taken deposits, and as far back as 1270 gave security to the State for the proper carrying on of their business. It was the failure of many of these deposit banks that led to the founding of the Rialto Bank as a public bank by the State. The Bank of Venice suspended payment sev. times owing to its loans to the State, and ceased after the Fr. invasion in 1797. Another early It. bank was that at Genoa, the famous Bank of St. George; this was a private bank of deposit; it was founded in 1407, and by its advances to the republic dominated the State and managed the public funds. The Fr. appropriated its property in 1800. The bank had an earlier hist., dating back to 1200, as a merchant and financial company, and is the first example of a body of shareholders whose liabilities were limited to their shares. The banks mentioned above were 'deposit' banks, receiving cash and paying it out on demand, and developed out of the business of the dealers in foreign exchanges. Another class of early banks were those which remained, at any rate principally, as exchange banks, of the utmost importance in the days when there was a large quantity of debased and clipped coin in circulation. Of these exchange banks the Bank of Amsterdam, founded 1609, lasted till 1820, and the Bank of Hamburg, 1619 till 1873, are the most famous. Their business lay 'in the assistance of commerce not by loans but by the local manuf., so to speak, of an international currency' (Palgrave, *Notes on Banking*). This currency was 'bank money.' Merchants brought coin or bullion to deposit, and were credited with the real intrinsic value; their credit was in 'bank money,' which they could draw on to meet their requirements. The income of the bank was gained from the small charges for such transfers in the books of the bank as were made from one merchant to another to meet their dealings. There is a good account of the working of the Bank of Amsterdam in Adam Smith's *Wealth of Nations*, iv. iii. The next great step in advance was the appearance of the bank note, i.e. a promise to pay in coin made by the bank which issued it. If these notes were backed by a general confidence in the bank issuing them, they would circulate as cash, and thus create a great expansion of credit and business with an economy of actual metal currency. The invention of the bank-note—apart, that is, from the Chinese paper money already alluded to—is due to Palmstruck, who founded the Bank of Sweden (Riksbank) in 1656; the

first bank-note was issued from the bank in 1658. The further hist. and development of modern banking is discussed in the following sections dealing with different countries.

English Banking and the Bank of England. The rise of banking in England has often been dated from the seizure by Charles I. in 1640 of the bullion deposited in the Tower of London by the city merchants. Though it was returned to them, for the future they deposited it for safety with the goldsmiths, who not only did business in money-changing, but were also employed in taking charge of rents and money on deposit from the country gentlemen, granting interest thereon. The goldsmiths had begun taking deposits in James I.'s reign, but the development of their business dates from the Civil war. They gave receipts for the money deposited, and these receipts, known as goldsmiths' notes, the earliest form of bank-note in England, circulated even more freely than coin, and large transactions were carried out by their means as late as 1696. During the Protectorate the goldsmiths were of assistance in financing the Gov., and after the Restoration they became lenders to Charles II. receiving as much as 12 per cent or over, and paying less than half that rate to their creditors whose deposits they used. In 1672 came the suspension of exchequer payments, a declaration of national bankruptcy which brought ruin not only to the goldsmiths, to whom the Gov. owed £1,300,000, but also to their depositors. The successful example of the Dutch banks, the demand for better security for deposits, a correspondingly safer form of paper currency than the goldsmiths' notes, together with a lowering of the rates of interest, charged in spite of the still existing laws against usury, still further the political necessities of the Gov. in the matter of loans, all these factors contributed to the demand for the establishment of a properly regulated bank, a banking system, and the end of the goldsmiths. Three private banks, Child's, Martin's, and Hoare's, which later carried on business in London were descended from firms of goldsmiths mentioned in the *London Directory* of 1677. Smith's Bank at Nottingham claims to have been founded in 1688: it was later amalgamated with the Union of London Bank, under the style of the Union of London and Smith's Bank. Other early banks, now amalgamated with other firms, are the Bristol Old Bank, 1750, and the Hull Old Bank, 1754. The proposal for the foundation of the Bank of England (*q.v.*) came from William Paterson (*q.v.*), Michael Godfrey, and other London merchants in 1691. The actual foundation took place in 1694, by Act of Parliament, the charter being granted on July 27 for 12 years, to 'The Governor and Company of the Bank of England.' The restoration of the coinage, the attempt to found a rival land bank, and the Gov.'s pressing need for money, led to the extension of the bank's privileges and capital by the Acts of 1697 and 1709, especially in the

strengthening of its monopoly, and interest was reduced to 6 per cent. No bank whose members consisted of more than 6 was allowed in England to borrow or take up money on its bills or notes payable on demand. This was thought to be sufficient protection against competition, as at that time no bank could, it was supposed, do business without the power of issuing notes. No joint-stock banks were, in fact, founded. In 1722 the bank's reserve, called the 'rest,' was estab. In 1750 the rate of interest on the debt was converted to 3 per cent, the debt to the bank amounting then to over £11,000,000, and in 1751 the bank was given the administration and management of the national debt, which it holds to the present day. Further renewals of the charter were made in 1764 and 1781. In 1795 the first issue of 25 notes was made, and later, for a short period, £1 notes. In 1797 cash payments were suspended by the Bank Restriction Act, owing to the general drain of gold and financial strain of the war; the bank's notes were thus made practically legal tender. The Bullion Committee Report was issued in 1810 and rejected by Parliament, and cash payments were not resumed till 1821. The overissue of notes by the small country private banks, and the constant failures, led to the Act of 1826, which allowed joint-stock banks, *i.e.* of any number of partners, and with the power of issuing notes; but they were not allowed in London or within a 65-m. radius. No notes were henceforth, until the First World War, allowed in England below £5. In 1833 joint-stock banks without note issue were allowed within the 65-m. radius; it may be noticed that the use of cheques had by this time begun to act as substitutes for notes. Finally, the Bank of England notes were made legal tender. In 1844 came Peel's great Bank Charter Act. The main features of this Act, as regulating the bank's position at the present day, have been already given. The Act also confined the right of note issue to those banks which possessed the right before 1844; as each lapsed or became absorbed, the limit of the Bank of England was to the extent of two-thirds of the lapsed issue expanded. The note-issuing powers of Eng. banks is of little importance at the present day, and the Bank of England note is practically the only circulating note in England. In 1862 companies with liability limited to the amount of their shares were allowed, and in 1879 unlimited companies formed before the Act of 1862 were allowed to adopt limited liability. Practically all the joint-stock banks availed themselves of this Act.

The nineteenth century in England was not without its times of crisis in banking. Since the Bank Act of 1844 there have been 4 banking panics and 1 financial crisis; the first, that of 1847, was the result of the speculation in railways and a hazardous extension of credit. On Oct. 1 all advances on public securities were stopped, and the bank rate was 8 per cent at the end of the month, when the coin

and bullion reserve at the Bank of England fell to a little over £1,500,000. The Bank Act was suspended on the 25th, and though no notes above the limit were issued, the panic ceased, but there had been serious failures of banks in Liverpool, Manchester, Nottingham, and the W. of England. Over-expansion of credit and a great depletion of banking reserves led to the panic of 1857, which continued even after the Bank Act was suspended on Nov. 12. On this occasion notes in excess of the limit were issued amounting to nearly £1,000,000, and the panic did not cease till the beginning of 1858. In 1866 the panic was marked by the historic failure of Overend, Gurney & Co.; it is stated that £4,000,000 in gold and notes was withdrawn from the Bank of England in one day; the rate was raised to 10 per cent and the reserve fell to less than £500,000. The Bank Act was suspended, but no excess issue actually took place. The failure of the W. of England Bank in 1878 caused great distress, but there was no general panic. In 1890 the failure of the great financial house of Baring (see *BARING*, family) resulted in a serious crisis. It must be remembered that London became the centre of the money markets of the world, and consequently had to bear an international as well as a national strain. This fact was marked in the New York and Amer. panic of 1907 and 1908, when the necessary gold importation to the U.S.A. was conducted through London.

Banking during the First World War. At the outbreak of the First World War the financial situation was fraught with difficulties for the authorities in London. The system of credit was so delicate that a move in the wrong direction might throw the whole machinery out of gear. England was still the great creditor nation, most of the world's bill transactions being liquidated in London. The estimate of Great Britain's trade with the belligerent nations in Europe could be put at over £2000 millions. An indication of the trend of events was given towards the end of July 1914, when the Ger. banks, in order to increase their cash reserves, began selling their securities in London. This caused some alarm and the London Stock Exchange was closed on July 29. Germany's selling activities were transferred to the U.S.A., and the New York Stock Exchange was closed on July 31. When the war began there was a run on the banks, the reserve at the Bank of England falling to £10 million. The bank rate rose to 10 per cent. The Gov. took immediate action. The banks were closed from Aug. 1 to 4, and it was decreed that there should be a moratorium for bills falling due. This was a beneficial measure. To husband the nation's gold and to keep it concentrated at the Bank of England, arrangements were made to issue £1 and 10s. currency notes. These were made legal tender for any amount and were issued on a fiduciary basis. The issue of these notes was tantamount to the suspension of the Bank Act. The Bank of England decided to lend money

to the banks to enable them to meet calls which might be made upon them while the excitement lasted. By this timely decision confidence was restored. Bank deposits rose immediately by £100,000,000 and the Bank of England deposits rose from £46,000,000 to £219,000,000. A Foreign Debt Committee was appointed to make advances to Brit. export traders against debts due to them from abroad. Advances of 50 per cent of the amount outstanding were made. A 6 months' bill was drawn by the trader upon his banker and accepted by him. The bill was left with the banker as cover for a loan of the amount required. The bill was renewable from time to time until 12 months after the close of the war. Any loss that might occur was distributed in the proportion of 75 per cent as to the exchequer and 25 per cent as to the accepting bank. As the bulk of foreign trade finance was carried on by means of bills of exchange, the Gov. decided that it would be as well to let these instruments function as freely as possible. A scheme was therefore drawn up which set forth that: (1) the Bank of England would provide, when required by acceptors, the funds necessary to pay all approved promissory bills at maturity; (2) acceptors would be under obligation to collect from clients all funds due to them, such funds to go towards repayment of advances; (3) the Bank of England would not claim repayment of any amounts not recovered by acceptors for a period of 1 year after the close of the war; (4) the joint-stock banks, in order to induce new business, would arrange with the co-operation, if necessary, of the Bank of England and the Gov. to advance the amounts required by clients to pay their acceptances at maturity. It is a creditable reflection on the quality of the business done by Brit. finance houses to note that the advances made by the Bank of England against bills of exchange were duly paid off. The foregoing were the chief measures adopted to meet the financial exigencies created at home by the war. Gold disappeared from circulation, its place being taken by treasury notes. These were partly covered by gold and partly by Bank of England notes and securities. Small notes had been issued by the Irish and Scottish banks for many years, and these banks were allowed to exceed their fixed issue limits of pre-war time. It is interesting to note that the paper currency issued during the war was greater in face value than all the gold and silver produced since the discovery of America (1492).

The foreign exchanges were greatly disturbed during this period. This will be at once apparent when it is remembered that the usual method of paying for imports by exports had been so deranged. The excess of imports over exports for 1914 was approximately £450 million, and this had to be liquidated. Matters were eased by loans raised in New York and credits arranged by the banks. As was natural, where the shipment of gold was restricted the old pars of exchange disappeared, and the par between.

London and New York fell from 4.85 to 3.74.

Post-1918 Problems. From the closing years of the First World War the history of banking must not be treated as abnormal, but as the evolving of new methods and means by bankers to meet conditions which had changed and were rapidly changing. The gold standard was restored in 1925, in accordance with a recommendation of the Cunliffe Commission of 1918. A Treasury minute of Dec. 15, 1919, imposed a limit known as the Cunliffe limit on the issue of treasury notes and laid down that the uncovered note circulation in any year must not exceed the maximum uncovered circulation of the previous year. The policy of deflation carried out by the Gov. in the following year checked the depreciation of sterling in relation to the dollar which had taken place as soon as the wartime control of the exchange rate was removed in 1919. When the pound and the dollar were near their former parity the Gold Standard Act of 1925 was passed whereby the Bank of England was again under an obligation to sell gold at the former price. The Bank was not, however, obliged to redeem bank notes and treasury notes in gold coin. In 1928 the Bank assumed control of the treasury note issue under the Currency and Bank Notes Act of the year. Bank notes of a pound and ten shillings were issued gradually to replace treasury notes. The amount of permissible fiduciary issue was accordingly raised to £260,000,000 and by the Currency and Bank Notes Act of 1939 it was raised again to £300,000,000. The fiduciary issue continues to be governed by these two Acts. The Treasury may, however, authorize a temporary increase by means of a minute laid before Parliament if requested by the Bank of England to do so. As shown below, this occurred during the years which followed, and by the end of the Second World War the fiduciary note issue stood at £1,350,000,000.

In 1931 it became clear that Britain could not maintain the gold standard. A financial crisis of the first magnitude had been precipitated (following a world depression), largely through the mismanagement of gold by the U.S.A. and France. That was not the sole cause of the crisis, for Brit. policy in 1925 was misconceived, though none could have foreseen the subsequent developments. That policy implied, besides co-operative policies in other countries, certain adjustments in the economic structure which in fact could not be made. Eventually, in 1931, in order to support the exchange, Britain was reduced to borrowing £130,000,000 in dollars and francs. But though the budget was balanced and the foreign drain on funds ceased for a time, there was a renewed outbreak of panic and another sudden drain of foreign funds. Faced with the prospect of parting with the rest of its gold reserves, the Bank of England gave up the struggle, and, for the second time since the war, Great Britain was forced off the gold standard. The Gold

Standard (Amendment) Act was passed on Sept. 21, 1931, and the Bank's obligation to sell gold was suspended.

For some years previous to the First World War the process of amalgamation of banks had been going steadily on. The advent of the war hastened it considerably, and in 1918 there emerged the joint-stock banks known as the Big Five (Barclay's Bank, Lloyd's Bank, Midland Bank, National Provincial Bank, and Westminster Bank). These five banks control current and deposit accounts to a combined total averaging over £1,700,000,000. A Treasury Committee appointed in 1918 decided that no further amalgamations without the approval of the Gov. would be allowed, and that the Treasury and Board of Trade must give their consent before more absorptions could take place. In Nov. 1929 the Securities Management Trust was registered. This is a subsidiary of the Bank of England, and its object is to examine with a view to assistance schemes for the 'rationalisation' of Brit. industry. In Apr. 1930 the Bankers' Industrial Development Company was registered. This company has a nominal capital of £6 million, divided into 45 'A' shares and 15 'B' shares of £100,000 each. The 'A' shares were taken up by the banks and first-class issuing houses, while the 'B' shares were subscribed by Securities Management Trust. As the 'B' shares have 3 times the voting rights of the 'A' shares, the Bank of England controlled 50 per cent of the voting strength. The purpose of this company was to advise and assist definite industries or sections of a particular industry in their preparation of reorganisation schemes, so that they could assume a form which could be recommended by the company to the City.

Financial and Monetary Policy in Second World War. There was no crisis on the outbreak of the Second World War, for experience in the First World War had taught what emergency measures were desirable in the way of financial and monetary policy. Yet there was nothing in the powers of the Gov. taken under the Finance Bill of 1940 over persons and property which endangered money in any bank. Equally there was nothing to endanger savings in any way. Indeed the figure of small savings in savings certificates, defence bonds, and in the increase in balances in the savings banks since the beginning of the war amounted to more than £180,000,000 and the weekly figure for these savings averaged over £5,000,000. Immediately on the outbreak of war the Currency (Defence) Act was passed to amend the law with respect to the application and financing of the Exchange Equalisation Account. The Gov. announced on Sept. 6, 1939, that the gold reserve in the issue dept. of the Bank of England had been transferred to the exchange equalisation account as part of the general plan put into operation for the strengthening of the nation's financial resources abroad. The value of the gold transferred (at 168s. per oz.) was about £275,000,000, and this entailed a corresponding increase in the fiduciary note

issue of the Bank of England from £300,000,000 to £580,000,000. On Sept. 5 the price of gold had been fixed at 168s. per oz., by the Bank of England, and the sterling-dollar rate at 4-04 dollars, and these prices were maintained subsequently. In pursuit of the Gov.'s policy of maintaining the purchasing power of sterling it was arranged that the vast bulk of transactions between sterling and other currencies should be conducted in London at official rates.

At the outbreak of war the Gov. assumed complete control over international issues to which the money belonging to Brit. subjects might be put, but at first the Gov. left the foreigner or person living outside the sterling area free to dispose of his assets, in England or elsewhere. But in June 1940 stricter control over the sale in the United Kingdom of securities by persons not resident within the sterling area was enforced by Orders in Council. Exchange regulations were issued by the Treasury with the object of placing the greater part of Brit. foreign trade on the basis of the official exchange rates, by tightening the exchange control and still further restricting the scope of the free sterling markets. A Treasury Order prohibiting dealings in foreign securities without Treasury permission was pub. on Aug. 27, 1939, under powers conferred by the Emergency (Defence) Act, 1939. Owners of such securities were directed to make a return of their holdings to the Bank of England. Steps were also taken early in 1940 for the control of retail prices in the case of primary necessities. There was early a system of food and industrial controls which were designed to avoid the vicious spiral of rising costs and prices and, to meet the problem of inflation through increased purchasing power, a substantial part of the surplus purchasing power of the public was withheld through the instrument of taxation. This was done in order to concentrate on the war effort as large a part as possible of the nation's productive resources, while at the same time satisfying the essential needs of the civil pop. and maintaining an adequate export trade.

An Order in Council of August 14, 1945, further extended the period during which the Treasury might authorise increases in the fiduciary note issue by Treasury Minute to be laid before Parliament for the life of the Emergency Powers (Defence) Act, 1945 (which expired six months after the end of the war). In Aug. 1941 the 2-year period originally provided was extended to 4 years, and in Aug. 1943 to 6 years, this authority expiring Sept. 5, 1945. Between Dec. 31, 1939, and Dec. 10, 1946, the fiduciary note issue rose from £580,000,000 to £1,450,000,000. All the profits of the note issue are passed on to the Exchequer.

See bibliography under BANK OF ENGLAND, and H. T. Easton, *History and Principles of Banks and Banking*, 1924; T. E. Gregory, *Select Statutes, Documents and Reports relating to British Banking, 1832-1928*, 1929; F. Lavington, *The English Capital Market*, 1934; R. Trupill,

British Banks and the Money Market, 1936; L. Waight, *The History and Mechanism of the Exchange Equalisation Account*, 1939.

Banking in Scotland. The Bank of Scotland was founded in 1695 by Act of Parliament. It issued notes of £100 to £5, and in 1704 £1 notes. In 1727 a rival bank, the Royal Bank of Scotland, was granted a charter, and in 1746 the Brit. Linen Bank. The private local banks ceased to exist by 1844, and Scotland shows an example of a small number of large banks with a highly developed system of branches, the number of offices to pop. being very high. The use of notes in business transactions is very great. The Act of 1844 fixed a limit to the issue of notes, beyond which the banks must hold specie; the banks of issue, now 8 in number, carry on the whole business of the country. Scottish banking hist. is marked by the disastrous failures of the W. Bank of Scotland, 1857, which failed for nearly £3,000,000, and the City of Glasgow Bank, 1878, which resulted in a total loss of over £6,000,000. Both these were unlimited liability companies. The Scottish banks, in addition, to those named, are the Commercial, National, Union, N. of Scotland, and Clydesdale Banks. See A. W. Kerr, *Scottish Banking*.

Banking in Ireland. The Irish banks have been conducted generally on the same principles as those in Scotland. Most of those which were estab. in 1844 are still in existence—an indication of the stability of banking in Ireland. But the assistance given in much more recent times by the existing banks to the general prosperity of Ireland has been equally marked. The Bank of Ireland was estab. in Dublin in 1783. Considerable privileges were granted to it, for, after 1820, no bank with more than 6 partners was permitted to issue notes within a radius of 50 m. from Dublin; but after 1845 this restriction was removed, and arrangements for the circulation of notes is now virtually the same as those in force in Scotland. There are 9 prin. banks in Ireland, 6 of which have the power of circulation. Their combined deposits total over £250,000,000 (1946). The Central Bank of Eire has the sole right in that country of issuing legal tender notes, and token coinage is issued by the finance minister through the bank. The Central Bank, which was estab. as from Feb. 1, 1943, in accordance with an Act of 1942, replaced the Currency Commission which was set up under the Currency Act, 1927, and had been responsible *inter alia* for the regulation of the note issue. On the dissolution of the Currency Commission its paid-up capital was returned to the shareholding banks.

Banking in France. In 1716 the celebrated John Law estab. the first bank of issue, Banque Générale, in 1718 the Banque Royale, the king guaranteeing the notes. It ceased to exist in 1721. Banks with limited issues carried on business, and there were attempts to reconstruct Law's bank. It was not till 1800 that Napoleon founded the Banque de France;

at first its note issue was shared with departmental banks, which, however, were amalgamated with it in 1848, and it became the sole issuing bank in the country. It has now over 400 branches, and does an enormous business in discounting bills and making advances. Its deposit business is not so large. The specie reserves of the bank are very high, reaching before the Second World War £140,000,000 in gold and £40,000,000 in silver, against a note circulation of nearly £200,000,000. In 1930 the gold reserve of the Banque de France was phenomenal, being the second highest in the world, the U.S.A. occupying the first place. The note issue is limited by law, but as long as the limit is not exceeded, it has not to hold any specific quantity of bullion against it. The bank can, to protect its gold reserve, pay notes in silver; the bank rate is therefore very steady. The governor and the 2 deputy-governors are appointed by the State. Other large banks in France include the Comptoir d'Escompte, 1848; Crédit Lyonnais, 1863; Société Générale . . . du Commerce, 1864; the Crédit Foncier, 1852, chiefly deals in mortgages. There are a large number of provincial joint-stock banks. The hoarding of gold in Fr. banks had a direct effect on the world financial crisis of 1931. By the middle of that year France had accumulated a stock of about £470,000,000 of gold which, added to the £1,000,000,000 in America, meant three-quarters of the world supply of monetary gold. This was the prin. cause—through the appreciation of the metal—of the catastrophic fall in prices that lay at the root of that crisis. On Dec. 2, 1945, a law was passed to nationalise the Banque de France and the 4 prin. deposit Bs.: Crédit Lyonnais, Société Générale, Comptoir National d'Escompte, and the Banque National pour le Commerce et l'Industrie. It also instituted strict gov. control over the activities of all other Bs. and set up a new body, the National Credit Council, to check the flow of credit in France.

Banking in Germany (1939). The Imperial Bank of Germany (Reichsbank) received its constitution in 1875; the Bank of Prussia was merged with it in 1876. It was closely controlled by the Gov.; the Chancellor appointed the president and council, and a proportion of its profits went to the State. The right of uncovered note issue is limited by law, frequently extended, but the bank is permitted to exceed the limit repayment of 5 per cent on the surplus. The Banks of Saxony, Bavaria, Württemberg, and Baden also possess the right of uncovered note issue, but the amount is small in comparison with that of the Reichsbank. An important feature is the 'clearing' system (*Giro Verkehr*) of the Reichsbank; a debt to a customer of the bank can be paid by paying the money at any of the numerous branches; it will be without charge transferred to the credit of his account. It amounts to a money-order business without expense, and serves as a substitute for cheques, which are not used to the same extent as in England. The private

and joint-stock banks in Germany are chiefly engaged in financing the country's trade and industries, and important banks, such as the Deutsche Bank (q.v.), took a prominent place before the Second World War in foreign and international finances. The Ger. banks are led by the 'Four D Banks'—from the initial letter of their names—viz. the Deutsche, the Discontogesellschaft, the Dresdner, and the Darmstadter. Since the end of the Second World War the banks in the Soviet zone of Germany have been nationalised.

Banking in the U.S.A. The Bank of N. America was founded by Congress in 1781, and obtained a charter from the state of Pennsylvania in 1782. It continued business till 1863. A federal bank of the U.S.A. was incorporated in 1791; its charter was not renewed in 1811, but owing to the financial straits of the various state banks, a second bank of the U.S.A. was estab. in 1816; it ceased in 1841. The state banks were regulated by varying legislation, and exchange naturally rose and fell according to the financial position of the different states. The close of the Civil war brought with it the necessity for some uniform system, and the national banks were estab. in 1865. The special feature of this system is the issue of notes secured upon U.S.A. bonds deposited with the treasury at Washington. No other banks have the right to issue notes, which, though not legal tender, are payable for all purposes except customs duties. National banks are bound to keep reserves up to 25 per cent of their deposits in the 'reserve' cities; in smaller centres this is reduced to 15 per cent. There are over 6000 national banks in the U.S.A. State banks, private banks, and the trust companies, which are, practically speaking, banks, are not thus restricted. During the panic of 1893, 150 national banks suspended payment; the panic of 1907 resulted in a suspension of all payments in currency. A change was made in the Amer. banking system by the Federal Reserve Act, which was approved on Dec. 23, 1913. The financial crises of 1893 and 1907 had indicated that some change was desirable and the Federal Reserve Act was framed to remedy certain defects which had become apparent in the national banking system. These were: (1) lack of concentration of banking reserves; (2) want of elasticity in the system of note issue; (3) absence of proper facilities for expanding credit in periods of pressure.

The Act divided the U.S.A. into 12 regional dists., in a tn. of each of which a federal reserve bank was estab. The 12 tns. so distinguished were: Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Minneapolis, Kansas City, Missouri, Dallas, San Francisco.

The management of each federal reserve bank is vested in a board of directors of 9 members. Three of these are chosen directly by member banks from their own ranks and 3 from outsiders engaged in commerce, agriculture, or some other

industrial pursuit. The remaining 3 are appointed by the Federal Reserve Board. One of the latter is appointed chairman, and to him is entrusted the custody of the securities presented by the bank as the basis of note issue. At the head of the system is the Federal Reserve Board, consisting of 7 members, 2 of whom, the secretary of the treasury and the comptroller of the currency, serve *ex officio*. Federal reserve banks are empowered to receive deposits from member banks and from the Federal Gov. only, becoming thus bankers' banks. They are excluded from competing with existing banks for the deposits of individuals and corporations, but they may enter the open market to deal in bills of exchange, etc. The Federal Reserve Board is responsible for the general policy of the system, prescribing regulations for member banks and determining from time to time the rate of discount. The chief specific powers granted to the board are: (1) to issue a weekly statement of condition of each federal reserve bank and a consolidated statement for all such banks; (2) to permit federal reserve banks to rediscount the discounted paper of other federal reserve banks, at rates of interest to be fixed by the Federal Reserve Board; (3) to suspend for a period not exceeding 30 days, and from time to time to renew such suspension for periods not exceeding 15 days, any reserve requirement specified by the Act; (4) to supervise the issue and withdrawal of federal reserve notes, provided for by the Act.

The capital of the federal reserve banks was to be provided from the subscription by each national bank of an amount equal to 6 per cent of its combined capital and surplus. Three per cent of this was to be paid up within a short time and the remaining 3 per cent at the discretion of the Federal Reserve Board.

A powerful factor of the new plan was the facility afforded by the issue of notes for the granting of credit through the rediscount of commercial paper. Good commercial paper may be presented for rediscount to a federal reserve bank by any of its member banks. Should there be a demand for currency, the rediscount may take the form of notes of the federal reserve bank, whose sole restriction in the making of rediscounts is its command over the requisite amount of gold laid down by law in respect of its own reserves. A federal reserve bank to which notes have been issued is required to pay 'such rate of interest on said amount as may be established by the Federal Reserve Board.' The following provision is made in regard to note issue: 'federal reserve notes to be issued at the direction of the Federal Reserve Board for the purpose of making advances to federal reserve banks through the federal reserve agents, as hereinafter set forth and for no other purpose, are hereby authorised.' These notes by the language of the law are 'obligations of the United States,' and are receivable by all national and member banks and federal reserve banks, and for all taxes, customs, and other public dues.

In the U.S.A. in 1930 there were over 2000 bank failures owing to the recession in business in 1929, and the gravity of the situation demanded a general reorganisation of Amer. banking institutions. The epidemic of failures of small banks in the depression of that and succeeding years changed Amer. public opinion in the direction of branch banking. In the U.S.A. there are 3 varieties of banks—national, state member, and state non-member—and reserves are held in different proportions against different types of deposits in different kinds of banks in various geographical localities. The position is further complicated by extensive interbank deposits and by Gov. deposits (all with their varying reserve regulations); so that a given change in the total reserves of the system may have different results on the supply of money in different circumstances.

Amer. banking is in the unique position of not having to worry about the adequacy of its reserves. 'Traditionally all bankers everywhere and always shape their policies with the double purpose of conducting their affairs profitably and of safeguarding their reserve positions. Amer. bankers have their full share of problems that are related to the extraction of profits from the business that they transact, but they alone among the bankers of the world must worry lest their reserves become too huge' (Leonard Ayres).

Reserve requirements of Amer. banks that are members of the Federal Reserve System are now much greater than they used to be in the years before the great depression (see above), but even so their excess reserves over and above the legal requirements have reached the huge total of \$4,000,000,000 (about £851,064,000). That excess is much more than the total of the entire stock of money in the United Kingdom at the beginning of the First World War. The chief cause of the piling up of these great excess reserves has been the gold imports of the past 54 years, which have amounted to more than \$8,000,000,000 (£1,702,128,000). The total holdings of gold owned by the U.S.A. amount to over \$15,000,000,000 (£3,191,489,000), which is about 60 per cent of the publicly reported gold stocks of the world.

See W. G. Summer, *A History of Banking in the U.S.A.*, 1896; J. J. Knox, *A History of Banking in the U.S.A.*, 1900; Lauchlin Currie, *The Supply and Control of Money in the United States*, 1934.

Banking in Australia and New Zealand. Under an Act passed in 1939 the Gov. of New Zealand has complete control of the Reserve Bank of New Zealand. The minister of finance is empowered to vary or suspend the minimum reserve of 25 per cent; and power is given to revalue the gold coin and bullion held by the bank on the basis of the market value of fine gold and to transfer any profit so obtained to a special reserve account. In Australia the governor in 1942 announced far-reaching measures to control the

operation of trading banks and to prevent expansion of credit by the banks, in accordance with recommendations of the Royal Commission on the Monetary and Banking System.

General Bibliography.—R. H. Benson, *State Credit and Banking during and after the War*, 1918; J. Fisher, *Bankers' Part in Reconstruction*, 1918; E. Burns, *Modern Finance*, 1920; H. G. Moulton, *Principles of Banking*, 1921; C. A. Conant, *History of Banking in all leading Nations*, 4 vols.; and *History of Modern Banks of Issue*, 6th ed., 1927; C. F. Dunbar, *The Theory and History of Banking* (4th ed.), 1926; J. B. Trant, *Bank Administration*, 1931; W. Leaf, *Banking*, 1935; A. M. Allen (and others), *Commercial Banking Legislation and Control*, 1938.

See also INTERNATIONAL SETTLEMENTS, BANK OF; LAND BANKS; PENNY BANKS; PEOPLE'S BANKS; SAVINGS BANKS.

Banksia, or honeysuckle-tree, is a genus of shrubs and trees of the order Proteaceæ, which are native to Australia and receive their name from Sir Joseph Banks. They grow in sandy forest land or on rocks, and the flowers secrete a delicious honey; they do not produce good timber, but are cultivated in England for the dense heads of flowers. *B. compar* and *B. serrata* are tall trees, and *B. grandis* reaches a height of 50 ft.

Banksia, a dist. of Southwark, London, on the S. side of the Thames, notable as the vicinity of the famous Globe Theatre (1599) of Shakespeare's time. Other theatres of former times were the Rose (1587), Swan (1595), and Hope (1613) theatres, and there were also a bear-baiting and a bull-baiting ring.

Banks Islands, a group of is. N. of the New Hebrides, in the Pacific. There are 17 in all, the most important being Vanua Lava and Santa Maria. Pop. 5000.

Bankura: 1. Dist. of W. Bengal, India. Area 2621 sq. m. Pop. 1,100,000 (mostly Hindus). 2. Chief tn. of foregoing, 90 m. N.W. of Calcutta, on the R. Dhakisor. Silk and oil manufs. and trade in rice and cotton seeds. Pop. 26,000.

Bann, name of 2 rvs. in the N. of Ireland, known respectively as the Upper and Lower B. The Upper B., 25 m. long, rises in the Mourne Mts. and flows N.W. into Lough Neagh. The Lower B., 40 m. long, issues from the N.W. corner of the same lough and flows N.N.W. through Lough Beg into the Atlantic, 4 m. S.W. of Portrush, dividing the cos. of Antrim and Londonderry.

Bannatyne Club, literary club founded in Edinburgh in 1823 by Sir Walter Scott and other Scottish antiquaries, notably David Laing, of the Signet Library, the club's first and only secretary, and Archibald Constable. It derived its name from George Bannatyne (1545-1609), the collector of the Scottish poetry of the fifteenth and early sixteenth centuries. The club was formed for the printing of rare works relating to Scottish hist., literature, and antiquities. It was dissolved in 1861. Sir Walter Scott was the first president. During its career the club was responsible

for the printing of 116 works, some of which are much sought after by collectors.

Banner, see FLAG.

Banneret, a higher rank of Eng. knight-hood conferred for distinguished conduct on the field of battle. Part of the impressive ceremony consisted in the changing of the knight's pennon for a banner. The last knight B. proper was Sir John Smith, who received the dignity from Charles I. for bravery at the battle of Edgehill.

Bannermann, Sir Henry Campbell, see CAMPBELL BANNERMANN.

Bannock (Gaelic *bannach*, a cake), a round cake, common in Scotland, made of pease or barley meal, or a mixture of the two. A mashlum B. is one made of mixed meal. It is baked on an iron plate known as a girdle.

Bannockburn (Gaelic, the stream of the white knoll), tn. of Stirlingshire, Scotland, on the Bannock Burn, 3 m. S.E. of Stirling, the scene of the great battle, fought on June 24, 1314, in which 30,000 Scots under Robert Bruce inflicted a crushing defeat on 100,000 Eng. under Edward II. The victory was largely due to Bruce's device of undermining the front of his position with pits covered with turf and rushes, into which the Eng. cavalry were precipitated in helpless confusion. The Eng. are said to have lost 30,000 men. The 'Bore Stone' is still shown on which Bruce is reputed to have set up his standard. (See J. E. Shearer, *Fact and Fiction in the Story of Bannockburn*, 1909.) B. is to-day a thriving place, with manufs. of tweeds, tartans, and carpets, and other industries. Pop. 4000.

Banns, see under MARRIAGE.

Banquette, in fortification, is a step formed of earth at the foot of the interior slope of a parapet (q.v.), extending along its whole length except where intervals are left for placing artillery to fire through the embrasures. Its height allows soldiers to fire over it, while it affords them almost complete protection.

Banshee, in Irish and W. Highland folklore a guardian female fairy that by shrieks and wailings foretells the death of a member of the family over whose fortunes she watches.

Banstead, a vil. of Surrey, England, E. of Epsom, 14 m. from London, and near which are the commons known as the B. Downs.

Banswara, state in the S.W. of Rajputana, India; area, 1606 sq. m.; pop. (1941), 259,000. The cap. B. is situated 8 m. W. of the Mahi R.; pop. 9000.

Bant, com. of Oldenburg, Germany, in the dist. of Jever, near Wilhelmshaven; pop. 16,000.

Bantam, seaport of Java, 40 m. W. of Batavia, situated in, and at one time the seat of gov. of, the residency of the same name. The residency has an area of 3050 sq. m. and a pop. of over 900,000.

Bantam Fowl (*Gallus bankira*), ornamental variety of domestic fowl noted for its small size, silky appearance, and pugnacious disposition. It came originally from the E. It weighs little over a pound, and has fluffy legs; the hens are

good layers, the flesh is good, and the eggs are of a delicate flavour.

Bantayan, is. of the Visayas group, Philippines, 60 m. from the tn. of Cebu. Area about 40 sq. m. It has pearl fisheries. Pop. 20,000.

Banteng (*Bos sondaicus*), species of wild ox, found in the Malay peninsula and archipelago. It resembles the gaur (*Bos gaurus*) of India, but it is of a lighter build, has a longer, sharper head, and more rounded horns. Like the gaur, it has no dewlap. The cow is bright dun in colour, with white legs and short hair. The back rises to a hump behind the neck. The B. inhabits jungles and forests, and is very ferocious. It has, however, sometimes been tamed by the Malays and interbred with the zebu.

Banting, Sir Frederick Grant (1891-1941), Canadian scientist, the discoverer of insulin. Professor of medical research at the univ. of Toronto, where a special institute was built for him. Born at Alliston, Ontario, and educated in the schools of that town and at Toronto Univ., where he graduated in medicine. Served in First World War for 3 years; wounded at Cambrai; obtained Military Cross. In 1923, with J. J. R. Macleod—who had directed his and C. H. Best's investigations, at Toronto Univ., into the internal secretions of the pancreas, 1921-22—he was awarded the Nobel prize for medicine; these investigations having resulted in the discovery of the 'hormone' insulin, claimed to be a cure for diabetes. In 1930 Lord Moynehan, president of the Royal College of Surgeons, in London, went to Canada to preside at the opening of the B. Institute, in Toronto Univ. At the demonstration in honour of B., medical men from all parts of the Brit. Empire took part. When the Second World War broke out, 1939, B. joined the Canadian Army and was appointed director of a Canadian military hospital in England; but he was recalled to Canada to take charge of medical research in connection with air fighting. He met his death in a plane accident when, with others, he was travelling between Newfoundland and Canada. The world owes him a great debt of gratitude for his discovery, which, when first announced, was not unnaturally received with some incredulity. The results obtained, however, soon placed the efficacy of his remedy beyond doubt, and the Canadian Gov. took the unusual step of voting him a life policy to enable him to continue his medical research.

Important progress in the study of *diabetes mellitus* was made in the seventeenth century by Thomas Willis and, a century later, by Dobson, while late in the nineteenth century, Claude Bernard, von Mering, and Minkowski made further progress in that their combined observations suggested that extracts made from pancreatic glands must contain some principle which prevented the accumulation of an excessive amount of sugar in the blood. B. thought that the reason why effective extracts could not be obtained was that the secretion produced by the pancreas

contained a substance which could destroy the anti-diabetic principle. It was evident that the pancreatic extract must be secured in such a way that it was free from this destructive substance. B. conceived that this could be done by ligating, or tying up, the duct and allowing time for certain cells in the pancreas to degenerate. This was the crucial idea, though much scientific assistance was needed to make it fruitful. Macleod arranged that C. H. Best should collaborate with B. on the chemical preparation and physiological testing of the extracts and, on Jan. 23, 1922, insulin was injected into a human patient, a boy of 14 years of age, with brilliant results. Thus did a scientific achievement, centring on a single experiment, lead to the most important results for human welfare. See S. Harris, *Banting's Miracle*, 1947.

Banting System, diet treatment advocated for the reduction of fat. The cure was first proposed by Harvey, and was practised by William B. (1797-1878), an undertaker, of St. James' Street, London. At the age of 66, and scaling over 14 stone, he denied himself bread, butter, milk, sugar, beer, soup, potatoes, and beans, and took in their stead meat, fish, and dry toast. By this treatment he reduced his weight by over 3 stone and his girth round the waist by 12½ in. B. wrote a pamphlet on the subject, entitled, *A Letter on Corpulence, addressed to the Public*, 1863, which ran into many eds.

Bantock, Sir Granville (1868-1946), Eng. musical composer, b. London, son of George Granville B., M.D. He was trained at the Royal Academy of Music. Ed. *New Quarterly Musical Review*, 1893-1896. Toured America and Australia conducting for Gaety Theatre touring company, 1894-95. Director, School of Music, Birmingham and Midland Institute, from 1900, and later prof. of music at Birmingham Univ. until 1934 when he was made chairman of the Corporation of Trinity College, London. He wrote a number of songs, orchestral music, and much choral music, including choral symphonies (without orchestra), such as *Atalanta in Calydon* and *Vanity of Vanities*. His symphonies include the *Hebridean Symphony* for orchestra. He was knighted in 1930. Life by H. Osmond Anderson.

Bantry, seaport and tourist resort, Co. Cork, Eire, at the head of B. Bay, 50 m. W.S.W. of Cork. It has fisheries and textile manufs. The chief export is agric. produce. B. Bay, 25 m. long and 4-6 m. broad, affords fine anchorage. Here was fought the battle of B. Bay between the Fr. fleet sent to help James II. after his deposition and the Eng. fleet under Adm. Herbert, in which engagement the Fr. gained the advantage. Pop. 3000.

Bantu, term embracing the African peoples speaking the languages of the B. group. They are distributed over S., S.W., and S.E. Africa, and include the Matebele and Mashonas in Rhodesia, the Zulus of Natal, the Bechuans (Basutos,

etc.), the Damaras in the S.W., and further N. the Swahili. They are to be distinguished from the Negroes of the Sudan to the N., and the Hottentots and Negritos in the S. The B. races came originally from N. and Central Africa. The word Bantu (people) was first used in its present ethnographical sense by Max Müller. Ethnographically, the B. customs and beliefs are interesting. The religious beliefs of the Kikuyu and Uhamba tribes usually consist of a rudimentary conception of some high god, corresponding in some ways to the old Heb. concept of Jahveh. The tribal elders are supposed to have a clear conception of it, but in the popular mind a belief in ancestral spirits—*ngoma* or *ainmu*—is the predominant spiritual factor. These spirits are not necessarily evil, but they reflect the character of the persons from whom they are believed to emanate, and the powers of spirits are inextricably interwoven with the position of the person in the tribe. This explains why an ordinary person is cast out at death, while the elder, who has taken part in sacrificial ceremonies, receives burial, the burial being regarded as pleasing to the spirit. Tabu is widespread, and though the reason for many of the prohibitions is obvious, as in the case of taboos respecting pregnant women, that of others is very obscure. Charms are widely believed, and many of the them are of the character of sympathetic magic, while others are a kind of perpetual prayer. Charms against infection are also common, and of course extend beyond the B. races. The Kambu myth concerning the creation is very vague: the first man is said to have been produced by the god Engai out of an ant-hill on the sea coast; and this B. Adam is referred to as *imuuma ndi*, i.e. 'he who came out of the earth.' An important factor in the social life of the B. is the formal initiation into the tribe, of which the external sign or symbol is generally the ceremony of circumcision. Among the Kikuyu these rites have reached an elaborate stage, notably in the celebration of circumcision feasts. Dances, especially in connection with ripening crops, also form an important feature of tribal custom. With the Kikuyu tribe, the *kiwata*, danced when the *mauvele* grain is reaped, is one of the best known. The dancers, entirely nude, are ornamented with headdresses of ostrich feathers, and have strings of beads and bells hung about their bodies, while their faces and legs are coloured with bright yellow dye. Other favourite B. dances are the *nguru*, associated with rest and leisure, and the *muzogo*, which is danced on the ripening of the maize crop.

Consult especially C. W. Hobley, *Bantu Beliefs and Magic* (a monograph full of information for the student of savage thought and institutions), 1922. See also S. M. Molema, *The Bantu, Past and Present*, 1920; J. T. Brown, *Among the Bantu Nomads*, 1926; A. M. Duggan Cronin, *The Bantu Tribes of South Africa*, 1929; J. H. Soga, *The South-*

Eastern Bantu, 1930; R. E. Phillips, *The Bantu are coming: Phases of South Africa's Race Problem*, 1930. For the B. language consult A. C. Madan, *An Outline Grammar as an aid in the study of Bantu and kindred languages*, 1904; and the same author's *An Outline Dictionary of the Bantu and other Uncivilised Races*, 1905; Sir H. H. Johnston, *A Comparative Study of Bantu and Semi-Bantu Languages*, 1919; A. Werner, *The Bantu Languages*, 1919.

Bantwa, state in the prov. of Gujarat, India. Area, 208 sq. m. The chief tn., B., is 80 m. N.W. of Diu. Pop. 9000.

Banville, Théodore Faullain de (1823-1891), Fr. poet, novelist, and playwright, was a native of Moulins. His first vol. of verse, *Les Cariatides*, 1842, stamped him as a romantic, and was followed by *Les Stalactites*, 1846; *Odelettes*, 1856; *Odes funambulesques*, 1857; *Nouvelles Odes funambulesques*, 1869, and *Idylles prussiennes*, 1871, this last inspired by the Franco-Ger. war. His *Traité de Poesie Française* is a valuable work on Fr. versification, of which he proved such a dexterous master. His delightful handling of ballades, rondeaux, and other medieval forms of verse was the starting-point of a notable revival in that kind of poetry. His play, *Gringoire* (Eng. title, *The Ballad-monger*, trans. by W. Pollock and Sir W. Besant), has been played in England by Sir Herbert Beerbohm Tree. See his *Mes Souvenirs*, 1882; also J. Charpentier, *Théodore de Banville*, Paris, 1925.

Banyan Tree (*Ficus indica*), species of Moraceae, an order which includes the mulberry, fig, and india-rubber tree. The B. is a sacred tree in India. It grows on an erect plant, and its roots hang downwards like thick supporting pillars. It often covers much space and grows to a great height. Gum-lac and caoutchouc are produced from the B., and the bark is used in Hindu medicine.

Banyuls-sur-Mer, Mediterranean watering-place and fishing vil., dept. of Pyrénées-Orientales, France, 21 m. S.E. of Perpignan by rail. The bathing attracts many visitors. Pop. 3500.

Banyumas, tn., Java, on the Serajo, 170 m. S.E. of Batavia. It is the cap. of the residency of the same name. Pop. 10,000. The residency has an area of 2140 sq. m., and a pop. of 1,300,000.

Banyuwangi, seaport tn., E. coast of Java, cap. of dist. of same name. Pop. 16,000.

Banz, tn. situated in Bavaria, S. Germany, nearly 4 m. S.W. from Lichtenfels, on the R. Main. Specially noted for its fine castle, which originally was used as a monastery for the Benedictine monks.

Baobab (*Adamsonia digitata*), species of Bombacaceae found in Africa and Australia. It is one of the largest trees known, having an enormous trunk, sometimes 30 ft. thick. Various parts of the plant have different uses, the bark having a strong fibre and being the chief ingredient of a febrifuge, the fruit (called monkey-bread) consisting of a pleasant though acid

pulp and a juice which makes a cooling beverage, the leaves being of use medicinally and for food.



BAOBAB MONKEY FRUIT

Bapaume, tn. in the dept. of Pas-de-Calais, France, 12 m. S. of Arras. On Jan. 2 and 3, 1871, it was the scene of 2 fierce engagements between the Fr. and Gers., the former suffering a loss of over 2000 men. Being on the route to Paris from Belgium, B. suffered during the First World War from shell-fire and other forms of devastation. In Aug. 1914 the Gers. defeated the Fr. here and captured the tn. During the battle of the Somme in 1916 it was a position of some importance, and fierce fighting took place between the Gers. and Brit., but the latter captured and held it, in spite of vigorous counter-attacks, on Aug. 20, 1916. Later it again fell into Ger. hands, to be captured again by an Australian div., when the Gers. retreated to the Hindenburg line in Mar. 1917. On this occasion, however, they sacked and ruined the place before withdrawing. It fell once more to the Gers. in their offensive of Mar. 1918, only to be retaken finally by the New Zealanders on Aug. 29, 1918. Pop. about 2700.

Baphomet, name of a mysterious idol with 2 heads, male and female, which the Templars were accused of worshipping in secret with licentious rites. The word is a medieval form of Mahomet.

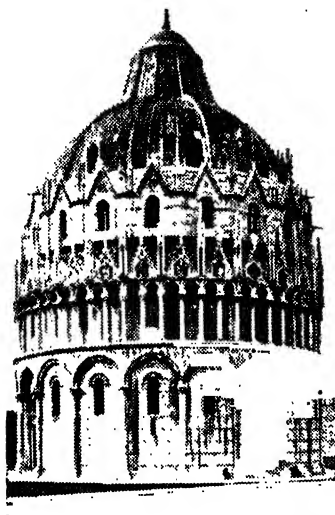
Bapta, genus of lepidopterous insects of the family Geometridae. The species are among the thin-bodied, day-flying, delicate moths with large wings. *B. bimaculata* and *B. punctata* are both found near London; the former is white with 2 brown spots on the front edge of the anterior wings, while the latter has the tips of its anterior wings clouded with brown.

Baptanodon, ichthyosaurian both amphibious and toothless, found in the Jurassic system of Wyoming. This fish-like reptile was from 9 to 11 ft. in length.

Baptism (from the Gk. βαπτισμός, sig-

nifying a ceremonial washing or purification), sacrament of the Christian Church. The Christian Church refers it to the authority of Christ, who commanded its administration as part of His teaching. Many references may be found to it in the books of the N.T. The idea of a purification by washing with water, however, did not originate with the Christian Church. The Christians themselves recognised that this ceremony had formed an essential part of the religions of many of the ancients. A controversy has long been in existence as to whether the sacrament of B. should be conferred only on adults who could profess their faith, or whether the sacrament could also be conferred on the children of Christians before they were able to answer and profess for themselves. The practice of the apostolic and early Christian Church was confined principally to the B. of adults, but probably this was due to the fact that the greater number of converts were adult proselytes from Judaism or heathen worship. The arguments brought to bear in favour of infant B. were principally that children had always occupied before the Christian era a recognised place in the Church, and that the new dispensation did not abolish that position. Also that from the words of Christ Himself it was obvious that children occupied a position in the Christian Church, and that B. of infants would occupy the same position as the rite of circumcision had in the Jewish ritual. On the other hand, it was argued that there was no definite command or statement that infant B. should take place, and great emphasis was laid on the fact that the apostolic B. was confined almost entirely to adults, the age at which most Bs. took place being about 30. In many cases it was much later, this being due to the desire to leave little scope for the commission of sin after B. It was sometimes deferred until death was felt to be near. The case of the Emperor Constantine may be taken as an example of this. Amongst the early fathers also there was considerable difference in the opinions expressed on the question of infant B. However, by the second century it had crept into a fair part of the Christian Church, and by the fifth century was an established doctrine of the Church. The Rom. Catholic and some of the Protestant churches recognise the rite of infant B., while, on the other hand, it was opposed by small sects during the pre-Reformation days and has been strongly opposed by a section of the Protestant Church since the Reformation. Another controversy ranged around the method employed in B. The methods adopted are 2, immersion and aspersion. From irrefutable evidence we know that the second method was adopted in the early days of the Church, but, on the other hand, from many authorities the advocates of immersion are able to claim that immersion is the only true B. Advocates of immersion are opponents of infant B., and while the upholders of aspersion recognise the validity of B. by immersion,

the immersionists do not as a rule recognise the validity of B. by aspersion. This controversy raged from the beginning of the Christian Church, and was one of the great separative forces in the quarrel between the E. and W. Churches. Although the W. Church ultimately adopted the ceremony of aspersion for a considerable time, B. by immersion was the general method throughout W. Europe.



W. F. Mansell

THE BAPTISTERY OF PISA

The rite of B. was accompanied in the early Church, and is still in the Rom. and oriental Churches, by a number of other ceremonies and forms. Most of these ceremonies, such as the signing of the cross on the infant's head, were rejected by the Protestant Church, but the latter was retained by the Church of England. Amongst some sects there still exists the ceremony of the B. of the dead. The ceremony of giving a name during B. apparently crept in from the Jewish use at the rite of circumcision.

Baptiste, Jean Baptiste Monnoyer (or Monoyer), see MONNOYER.

Baptiste, John Gaspar (d. 1691), Flemish painter, b. in Antwerp; a pupil of Bosch-aert. He came to England during the Civil war, and served in Lambert's army; but, after the Restoration, returned to his original profession, and was much employed by Sir Peter Lely in painting his draperies and backgrounds. He worked occasionally also for Kneller and Riley. He made designs for tapestries which reveal skill in drawing. There is a

portrait of Charles II. in St. Bartholomew's Hospital by this artist.

Baptistery, name given to the building in which Christians performed the ceremony of baptism. The most celebrated existing Bs. are those of Rome, Florence, and Pisa; the most anct. is the B. of S. Giovanni in Fonte, near the church of St. John Lateran at Rome, commonly said to have been erected by Constantine the Great. The plan of this building is an octagon, with a small portico at the entrance; the interior is decorated with 8 porphyry columns, the finest of the kind in Rome. The diameter of this structure is about 75 ft. The B. of Florence, which is octangular, with a diameter of about 100 ft., stands opposite the prin. entrance of the cathedral. The 3 bronze doors are celebrated for their bas-reliefs, and for the marble and bronze figures above them. The B. of Pisa, erected between the years 1152 and 1160 by Diotisalvi, is a singular design. The plan is circular, with a diameter of 116 ft.; the building is raised on 3 steps, and surmounted with a dome in the shape of a pear. The external elevation is divided into 3 stories.

The multiangular edifices placed at the sides of cathedrals, which are called chapter-houses, are very similar in plan to the anct. B. It is possible that they were originally used for that purpose.

Baptists, Christian denomination who differ from others in regard to the views which they hold concerning baptism. The distinctive view of the B. is that only believers should be baptised, and their method of baptism is by immersion. The modern B. distinguish themselves from the Anabaptists and reject any connection with them. They base their doctrines upon the teachings of the Apostles, maintaining that throughout the corruption of the Christian Church during the medieval period their doctrines were maintained by the Cathari and the Albigenses. The beginning of the modern B. Church, however, is traced to the work of John Smyth in the reign of James I. John Smyth was originally an ordained minister of the Eng. Church who broke away from that Church and fled to Holland. Here he fell under Mennonite teaching, and after severing his connection with the Independents, whom he had joined, he issued a confession of faith for the first Eng. B. church 'of Eng. people remaining in Amsterdam in Holland.' This declaration of faith laid down the 2 main doctrines of the B. Church, 'to receive all their members by baptism upon the confession of their faith and sins,' and that 'baptism in no wise appertaineth to infants.' Smyth d. in Holland, but his chief follower came to England in 1612, the year of Smyth's death, and estab. his church in Newgate. This was the origin of the 'General' B. denomination in Great Britain. The General B. denomination repudiated the Calvinistic doctrines, holding to the doctrines of the Arminians, and maintaining the doctrine of universal redemption. The beginning of the Particular B. Church in England may be traced to the

Jacob church in Southwark, and its foundation may be approximately dated as taking place in the year 1633. Of this Jacob church the famous Praise-God Barbon was a member. The Particular B. Church was the direct offshoot of the Independents, and was therefore naturally Calvinistic in doctrine. Both sections of the B. Church suffered persecution during the reign of Charles II., but the passing of the Toleration Act of 1689 gave liberty of worship and freedom from persecution to the B. together with other dissenters. The B. continued in this divided state for some very considerable time—the Arminian section, who held the doctrine of a general redemption, being known as the General B., and the Calvinistic section, who held the doctrine of a particular redemption, being known as the Particular B. A schism took place towards the end of the eighteenth century in the ranks of the General B., and a General B. New Connection was formed, the old connection being Unitarian. The names General and Particular B. gave rise to the impression that the General B. were those who admitted to their communion members who professed faith in Christ but did not agree with their views on baptism, and Particular as those who clung jealously to their own doctrines and refused admission. This idea, however, is entirely wrong, the names applied respectively to convey that idea being 'open B.' and 'strict B.' In 1891 the 2 sections of the B. were united into one body, known as the B. Union of Great Britain and Ireland. This union was due principally to the efforts of the Rev. John Clifford (*q.v.*). The method of church gov. is congregational, the officers of the church being the pastor, the deacons, and evangelists. Each church is self-governing, and is subject to no external pressure. The B. have a fine missionary association, and a number of colleges for the training of young men for the ministry. At the present day the B. have members in every part of the world in which white men are found. In the U.S.A. the first B. church was estab. at Providence, Narragansett Bay, by Roger Williams, in 1639. Another church was founded at Aquidnek, Rhode Is., 1641, and one at Newport, 1644. The Providence church did not flourish, but the Newport church increased its influence, and a branch was formed at Rehoboth, Massachusetts, 1649. The B. suffered persecution, but this only resulted in spreading the churches, and further branches were formed. The need of organisation was felt, and in 1707 the Philadelphia Association was formed 'to consult about such things as are wanting in the churches, and to set them in order.' At Charleston the Charleston Association was formed in 1751. A B. college was founded in 1764 (known since 1804 as Brown Univ.). By 1812 there were 173,972 members of B. churches in the U.S.A. B. are found chiefly in those countries where the Protestant form of Christianity predominates; thus they are numerically strongest in N. America and

in Great Britain. In the Brit. Isles there were (1944) 4100 chapels, and their members numbered 368,000. In U.S.A. the number of adherents is 8,262,000 (1936). B. churches were formed in the old Russian Empire about the middle of the last century, but suffered repression under the tsardom in the interests of the Orthodox Church. Statistics for 1931 give the following numbers of adherents in the Brit. Isles—England, 890,000; Wales, 410,000; and Scotland, 53,000. Elsewhere: Canada, 422,000; Australia, 90,000; New Zealand, 21,000; Union of S. Africa, 17,000; U.S.A., 8,440,000 (*The Church Self-Government Chronicle*, 1931). Prior to the Soviet regime there were probably 1,000,000 adherents in Russia. These figures give a world total of about 10,343,000, but later figures claim a communicant membership in 70 countries of over 13,000,000. There are, in the Brit. Isles, some 4000 B. chapels with a membership of about 400,000. In recent years, following the general trend of the Free Churches, the B. have tended to a broadening of their views and tenets. See H. C. Vedder, *A Short History of the Baptists*, London and Philadelphia, revised ed. 1897; W. T. Whitley, *Baptist Bibliography*, 1916; and *A History of British Baptists*, 1923; J. H. Rushbrooke, *The Baptist Movement in the Continent of Europe*, revised ed. 1923; A. C. Underwood, *A History of the English Baptists*, 1948; also *The Baptist Handbook*, ann.

Baptist World Alliance, formed in 1905 on the occasion of the first Baptist World Congress in London. Its object is to 'manifest the essential oneness in the Lord Jesus Christ and to promote the spirit of fellowship among the Baptist order and faith throughout the world.' The alliance has since organised sev. international congresses in the Old and New Worlds, the latest being that at Toronto, Canada, in 1928. In its *Directory* the alliance claims over 70,000 churches in 70 countries, with a total communicant membership of 13,000,000 (1946).

Baptist Young People's Union of America, federation of all Young People's societies connected with the Baptist churches in the U.S.A. and Canada, organised in 1891. It has a membership of over 175,000, and its headquarters are in Michigan Avenue, Chicago.

Bar, in law, term used to denote collectively those members of the legal profession who have the right to plead on behalf of suitors. It is also applied to the enclosed space in a court of justice where such members of the profession may plead, and to the prisoner's dock. A peremptory exception sufficient to stop a plaintiff's action either temporarily or permanently is also termed a B.

Bar, in heraldry, see **HERALDRY**.

Bar (formerly **Rov**), tn., Ukraine, 50 m. N.E. of Kamenets-Podolsk, on the Rov; an affluent of the Bug. Pop. 23,000, largely Jewish. See **BAR, CONFEDERATION OF THE**.

Bar Association, American, was formed in 1878, after the Civil war, at a time

when, as a consequence of that war, the course of judicial decision in the S. states had been affected in that the prominent positions both at the Bar and Bench being taken by N. and W. lawyers, and the S. jurisprudence had come to lose such distinctive character as it formerly had. The unification of Amer. law was assisted by the A. B. A., and of the 15 signatories of the call for the preliminary conference 5 came from the S. states. Its ann. meetings are opened by a presidential address in which are communicated 'the most noteworthy changes in statute law on points of general interest.' Its committee reports have had considerable influence in the shaping of the course of legislation, and it has improved legal education. Its membership, about 28,000, is representative of the whole Amer. B., and its ann. meetings are attended by as many as 2000 delegates. The headquarters of the A. B. A. are in La Salle Street, Chicago.

Bar, Confederation of the, confederation of Polish nobles, formed in 1768, at the fortress of Bar, in Podolia, for the purpose of defending Poland against the Russian Gov. After many victories it estab. a gov., and, ignoring the Polish king, sent envoys to the courts of Europe. It gradually lost power through the blunders of Dumouriez, sent by the court of Versailles to act as commander-in-chief, and dissolved in 1776.

Bar Council, or, more fully, the General Council of the Bar, is the accredited representative body of the Eng. Bar; its functions are to act in a consultative and advisory capacity, dealing with all matters affecting the profession, such as the proposal and criticism of legal reforms, matters of practice, conduct, etiquette, etc. The body consists of the attorney-general and solicitor-general for the time being, the ex-attorney- and solicitor-generals, together with 48 selected members of the Bar, not less than 12 'inner' barristers (king's counsel) and not less than 24 'outer' barristers (juniors). The General Council was estab. in 1895, and replaced the Bar Committee, estab. 1883.

Bar, Trial at, form of trial, in Eng. legal procedure, before a full bench of judges. It was the usual mode of trial prior to the writ of *nisi prius* (Statute of Westminster, 1285), and is now the only survival of the old procedure. Such a trial takes place in the king's bench div. before a bench of judges and only in cases of great importance, or when demanded on behalf of the Crown by the attorney-general. The trial of Col. Arthur Lynch for high treason, 1904, and the hearing of the petition of right, 1905, to decide the responsibility of the Brit. Gov. for claims against the Transvaal Republic for acts done by it before or during the S. African war, took place 'at B.' The last recorded T. at B. was that of Roger Casement for treason in 1916 (see CASEMENT, R. D.).

Barabanki, dist. in the United Provs., N. India. It is a marshy plain traversed by the Rs. Gogra and Gumti. Area about 1703 sq. m. The soil is fertile, and

wheat, rice, and grain are grown to a considerable extent. Pop. 1,100,000. The cap. is Nawabgunj, also known as B., which is 15 m. E. of Lucknow, and has a pop. of 15,000.

Barabbas, or Barabas (Aramaic, 'son of the father'), name of a robber mentioned in the N.T., who was released instead of Christ by Pontius Pilate at the desire of the Jews.

Baraboo, co. seat of Sauk co., Wisconsin, U.S.A., on the B. R., and on the Chicago and N.W. railroad, 37 m. N.W. of Madison. It is picturesquely situated 3 m. N. of Devil's Lake, 1000 ft. above the sea. It has woollen mills, railroad shops, and a fruit-canning factory, etc. Pop. 6000.

Barabra, see BERABERA.

Baracoa, seaport at the E. end of Cuba. The cap. of the is. from 1512 to 1514, it is now the centre of the banana and coconut export trade. Pop. 5000.

Baraguay-d'Hilliers, Achille, Comte (1795-1878), Fr. marshal, son of Louis B. d'H., b. at Paris; was a soldier almost from childhood; had his left hand carried away by a cannon-ball at the battle of Leipzig. He took part in the Sp. and Algerian campaigns, and was promoted to the rank of lieutenant-general. He commanded the Baltic expedition, took Bomarsund in 1854, and won the battle of Melejana in 1859.

Baraguay-d'Hilliers, Louis (1764-1812), Fr. general, b. at Paris. He served under Crestine, and was arrested with him, but re-entered the army and distinguished himself under Bonaparte in Italy. He took part in the ill-fated Russian campaign, and having been made prisoner, when released was ordered by Napoleon to return under arrest. He d. at Berlin on his way back.

Barahat, formerly cap. of the state of Garwhal, situated on the N.W. bank of the Bhagirathi R., United Provs., India. This tn. suffered very severely in 1803 from an earthquake; it recovered something of its former importance owing to the numerous pilgrims who used it as a starting point for the sacred source of the Ganges.

Barahona de Soto, Luis (c. 1535-95), Sp. poet, whom Cervantes praises highly in *Don Quixote*. He wrote a continuation of Ariosto's *Orlando Furioso*, the first part of which bears the title *The Tears of Angelica*. He also wrote satires, eclogues, epistles, etc.

Baralippton, see SYLLOGISM.

Baralong Case, incident in the First World War. The Brit. armed auxiliary B., disguised as a tramp steamer, sank a Ger. U-boat which had torpedoed the *Nicosian*, an Amer. boat carrying cattlemen. The crew of the U-boat were killed, Aug. 1915. The Ger. Gov. declined the offer of the U.S.A. Gov. to submit the case to a tribunal of Amer. officers, and threatened ruthless Zeppelin warfare in retaliation, Dec. 1915.

Baranov, Baranof, or Sitka Is., is in the Alexander Archipelago, Alaska, U.S.A. It is about 100 m. long, and its greatest breadth is 25 m. Coal and deposits of placer gold are found on it, and

there are fisheries along the coast. The cap. tn. is Sitka (q.v.), pop. 2000.

Barante, Guillaume Prosper Bruglière, Baron de (1782-1866), Fr. historian and politician, b. at Riom. He was the author of a hist. of the Burgundian dukes, as a result of which he was elected a member of the Fr. Academy. See his *Souvenirs* (1890-99), ed. by his grandson.

Barasat, tn. in W. Bengal, 12 m. from Calcutta; pop. 10,000.

Baras Khotun, or **Bars Khotan**, the City of the Tigers, formerly a large tn. on the banks of the Kherlon, in the country of the Mongols; the ruins of the tn. lie, according to Father Gerbillon, the only European who ever visited them, in 48° N. lat. and 113° 42' E. long. After the Moguls had been defeated and expelled from China, Toghon Timur, the Mogul emperor, built this tn. as the future seat of the empire; he d. there in 1370.

Baratang, see under ANDAMAN ISLANDS. **Barataria** (Sp. *barato*, cheap), a bay on the W. side of the Mississippi delta, which the notorious Jean Lafitte (1780-1826) and his band of pirates, smugglers, and slaves made their headquarters. Their band was broken up by Commander D. T. Patterson, of the U.S. Navy, 1815.

Baratier, Johann Philipp (1721-40), Ger. boy genius, b. at Schwabach, near Nuremberg, was the son of Francis B., pastor of the Fr. Protestant church at Schwabach. Before he was 5 years old he could speak Lat., Fr., and Ger., and could read Gk. At the age of 6 he began a 3 years' course of Heb. study, reading with great avidity the books of the Cabalists, Talmudists, commentators, etc. At 9 he collected materials for a dictionary of rare Heb. and Chaldaic words, with philological notes, and about 2 years later trans. into Fr. from the Heb. Benjamin of Tudela's *Itinerarium*, to which he added 8 dissertations. He took his M.A. at Halle at the age of 14 and was received into the Royal Academy at Berlin. He then studied law as a matter of duty, after which he turned to hist., philology, and antiquities. He began a *History of the Three Years War*, a *History of the Heresies of the Anti-Trinitarians*, and an *Inquiry concerning Egyptian Antiquities*, but he d. before he reached the age of 20. His life was written by Forney (Halle, 1741).

Baratieri, Oreste (1841-1901). It. general, b. at Condino, in the Tyrol. He served under Garibaldi in Sicily, 1860; was appointed governor of Eritrea, in Africa, 1891, where he adopted an aggressive policy, and, advancing into the interior, captured Kassala, 1894. In the following year he twice defeated Ras Mangasha, but was put to rout with great loss of life to his men by the army of Menelik near Adowa, 1896. He was tried before a court-martial and was censured, 1897; he left the army the same year, and pub. his defence, *Memorie d'Africa*, 1892-96 (1897).

Baratynski, Eugene Abramovitch (1792-1845), Russian poet. He at first entered the military service, but quitted the army in order to devote himself to poetry. He

was considered by his friend Pushkin to be the best elegiac poet of Russia. He d. at Naples.

Barava, see BRAVA.

Barb, name of a breed of bloodstock, reared by the Moors of Barbary and Morocco, and introduced by them into Spain. They are not remarkable for beauty or symmetry, but their speed, patience, and endurance are unrivalled. Probably nearly every Eng. racehorse of note has a strain of the blood of this animal. There has always been much controversy over the origin of the B. Prof. Ridgeway's view is that the anct. Libyan type of horse was the ancestor of the modern B. It seems certain that the Libyan horse of Lify's time is the ancestor of the Barbary horse found in its purest form in Morocco to-day. This animal is usually about 14 hands and resembles the Arab horse, except that it has a convex profile and a longer croup. In recent times Fr. and Eng. blood has been freely used in Algeria for crossing with the local Bs., and these have consequently lost their former type, except in Morocco. In Spain to-day the B. blood is predominant in Andalusia, Granada, and other S. regions. The usual colour of the Sp. Bs. (which are also influenced by the anct. Libyan B.) is bay, but there are greys and blacks. In N. Spain they are mostly grey and smaller than the Andalusian horses. There was formerly great controversy on the question of what the highly prized N. African blood in the Celtic pony really consisted, some believing it to be Arab, while others were of the opinion that it was the forerunner of the B. and not the Arab horse, that was crossed with the Celtic ponies of the Low Countries, and those of the cognate breed in S.E. England. It is, however, evident that it was not until many centuries later that an indisputably pure-bred Arabian horse reached England (1616). Shakespeare often refers to them, e.g. Iago mentions a 'Barbary horse' (*Othello*, i. i.), and Osric in *Hamlet* says that 'the king hath wagered six Barbary horses.' It is recorded that Henry VIII. received 2 pure-bred Sp. Bs. of good quality from Ferdinand of Aragon, and some writers assume that such horses laid the foundations, on the female side, for the thoroughbred stock which was to follow. Much controversy, too, existed as to whether the famous Godolphin, which came to England in 1724, was an Arab or a B. By whatever means the horse was obtained, it came eventually into the hands of Lord Godolphin, and became one of the three founders of Eng. bloodstock (the other 2 being the Byerly Turk and the Darley Arabian). The Godolphin was a dark bay, about 14-3 hands. Maj. Lamb thinks that the horse was a B. because he 'probably came from Morocco' and had 'a distinctly Barb appearance.' The strain of this great horse exercised much greater influence in earlier days than it does to-day, for the Darley Arabian is undoubtedly the ancestor of many more famous latter-day horses than is the Godolphin. On the other hand, other

writers, including Lady Wentworth, consider that the Godolphin was not a B. at all, but an Arabian, and that 'the only genuine and contemporary picture painted from life by Wootton shows him to be a high-class Arab.' See W. Ridgeway, *The Origin and Influence of the Thoroughbred Horse*, 1905; A. J. R. Lamb, *The Story of the Horse*, 1938; Lady Wentworth, *Thoroughbred Racing Stock and its Ancestry*, 1938.

Barbacan, see **BARBICAN**.

Barbacena, tn. in the state of Minas Geraes, Brazil, on the W. slope of the Serra Mantiqueira, 130 m. N.W. by N. of Rio de Janeiro. Elevation about 3700 ft. above the sea. Pop. 10,000.

Barbacoas, tn. in the dept. of Cauca, Colombia, 140 m. N. by E. of Jinto, on the Telembi, a trib. of the Patia, and navigable from the sea. Pop. 6000.

Barbados, or **Barbadoes**, the most easterly of the W. India Is.; it is 21 m. in length and 14 m. broad, and its total area is 166 sq. m. or rather larger than the Isle of Wight. Bridgetown is the cap., situated in lat. 130° 5' N. and long. 59° 41' W. The pop. of the Is. is about 200,000 or over 1100 to the sq. m. The Is. is of coral formation, and almost encircled by coral reefs which are dangerous to navigation. The surface is comparatively flat, but rises in terraces culminating in Mount Hillaby (1145 ft.). Much of the soil, though very fertile, has very little depth, and has been formed by successive eruptions of the Soufrière in St. Vincent (*q.v.*), the ashes of which, carried by an upper current of air for a great distance, fell as lately as 1902 over the Is. The first recorded fall was in May 1812, and is still spoken of as 'May dust.' B. has no natural harbour, but the open roadstead of Carlisle Bay is well sheltered and there is a small inner harbour of caracane protected by the mole-head. There are no rivers worthy of mention, the porous soil forming subterranean channels and wells which percolate to the sea below low-water mark. There are no forests. The Is. is very highly cultivated. Sugar is the staple product, nearly 70,000 ac. being devoted to sugar-cane cultivation, of which 40,000 ac. are under cane each year. The average ann. production of sugar and fancy molasses is equivalent to 100,000 tons of sugar. Other products are coffee, bananas, coco-nuts, cocon, and pimento. The Sea Is. cotton industry was revived in 1902, but to-day very little is grown. Like most W. Indian Is., B. suffered from the cane-sugar crisis that followed the increased production of subsidised beet sugar. Petroleum is known to exist and boring operations have been conducted in recent years though without much success. B. is the healthiest of all the W. Indian Is. for Europeans, and the great heat is moderated by the N.E. trade winds, particularly from Jan. to May. The temp. varies from 75° F. to 83° F., and in the winter months the minimum mean temp. at night is as low as 63° F. The ann. rainfall is from 50 to 70 in. Hurricanes and earthquakes occur. The Is. is much favoured by residents in neigh-

bouring colonies as a health resort. The Is. is divided into 11 Church of England parcs., and is the see of the bishop of the Windward Isles. There is a Supreme Court, and grand sessions are held every 4 months. There are over 500 m. of main and secondary roads, and 10,000 m. of telephone line. The governor has an executive council, executive committee, legislative council, and house of assembly, whose members are elected biennially by the people, but the number of coloured electors is not large. The old foundation made a liberal provision for education, which is supplemented by an ann. vote. B. is the only W. Indian Is. to make provision—in Codrington College—for a univ. education. B. is the trade mart for the Windward Is., which lie to the W., and is the headquarters of the Brit. forces of the W. Indies. The chief exports are sugar, fancy molasses, and rum. The imports are cotton goods, chemical manures, rice, dried fish, and machinery for sugar plant. Bridgetown (pop. 20,000) derives its name from an Indian bridge, which the first settlers found where the Chamberlain Bridge now is. Père Labat, the celebrated Dominican father, who visited the Is. in 1700, described the tn. as handsome, with straight, broad, clean, and well-planned streets. Trafalgar Square, formerly called the Green, has the second statue to be erected to the memory of Nelson in the Brit. Empire, the first having been unveiled in Montreal in 1808. The public buildings are an imposing group, built in post-It. renaissance style of locally hewn coral rock. St. Michael's Cathedral, also built of coral, stands to the E. of the public buildings, on the site of a building erected in the seventeenth century, which was destroyed in a hurricane in 1780, the cost of the new building being defrayed by a lottery sanctioned by the legislature. Another notable building is George Washington's House, the lodging which the Amer. statesman and his invalid brother occupied on their visit in 1751. St. Anne's Castle, a quaint fort facing the bay, was erected in 1703 by Sir Nevil Granville in honour of Queen Anne, Bathsheba, 14 m. from the cap., is a popular seaside resort. Long Bay or Lord's Castle, in the par. of St. Philip, is one of the finest mansions in the Caribbean. It was built in 1820 for one Samuel Hall Lord. Ragged Point, a lighthouse, 15 m. from the cap., is generally the first landmark sighted on approaching B. S. Point lighthouse (7 m. from the cap.), built of iron, also commands an extensive ocean view. Welchman's Hall Gully and Cole's Cove are among the well-known natural features of the Is. Other tns. are Speightstown (pronounced Spikestown), 12 m. from the cap. and formerly a shipping place of importance, which is said to be built on the lands of one William Speight, a member of Governor Hawley's assembly in 1639; and The Hole or Hole Town on the W. coast, in which is a tercentenary monument commemorating the landing of the party of the *Olive Blossom* in 1605.

Hist. B. is generally supposed to have been visited in 1536 by Portuguese navigators, who called it Los B., after the bearded fig-trees there. In 1605 settlers for Guiana, an Eng. party in the *Olive Blossom*, fitted out by Sir Oliph Leigh, landed near what is now Hole Town, and took possession in the name of King James of England. But there was no actual settlement till 20 years later, when a wealthy London merchant, Sir William Courteen (who tried also to settle Madagascar), equipped an expedition under the patronage of the earl of Marlborough. His ship landed a small band of settlers near the Hole Town site, and founded Jamestown or Hole Town. In 1625 the is. was included in the commission given to Sir Thomas Warner (see *SR. KITTS*), under the patronage of the earl of Carlisle who, later, had a grant from Charles I. of most of the Caribbean is. Naturally the earl of Marlborough opposed the grant, and a compromise was reached; but subsequently the earl of Pembroke succeeded in obtaining a grant of the is. Carlisle, however, returned to B. and, his rights having been restored, he lost no time in consolidating his position by offering land to speculators who founded St. Michael's Town, now Bridgetown. Eventually Carlisle's heir assigned his interest to Francis Lord Willoughby of Parham, who, however, while securing his own position under an Act of Parliament, acknowledged the king's right to dominion over the is. During the Civil war many royalist families fled to B. Cromwell sent a fleet under Adm. Sir George Ayscue to subjugate the is., and in 1652 Willoughby had to surrender the reins of gov. But on the Restoration Charles II. gave honours to many prominent Royalists in B., in recognition of their loyalty and defiance of Cromwell. Lord Willoughby agitated for the restoration of his rights, and in 1665 the Privy Council allocated the profits derived from the is. between him, the Gov., and the heirs of Marlborough and Carlisle. This involved raising a duty of 4½ per cent on all the is.'s exports, which cost the inhab. an enormous sum in the ensuing years, and in 1834 the is.'s legislature passed an Act remitting the duty which, however, was only finally repealed in 1838 by an Act of the Imperial Parliament.

See Sir Robert H. Schomburgk, *History of Barbados*, 1848; H. Darnell Davis, *Cavaliers and Roundheads in Barbados* (Georgetown), 1887; V. Harlow, *History of Barbados*, 1926, and *Christopher Codrington, 1668-1710*, 1928.

Barbados Cherry, fruit of the *Malpighia urens* and *M. glabra*, the latter resembling closely a cherry in size and appearance, but not in flavour. They are found in the W. Indies.

Barbados Gooseberry, fruit of the *Pereskia aculeata*, is an oval, yellow, edible fruit which grows on a W. Indian cactus. The plant on which it grows has thick, flat leaves with hard spines and the flowers are showy and white.

Barbados Leg, another name for *elephantiasis Arabum*.

Barbara, in formal logic, is the first word of a useful and ingenious set of mnemonic lines which form: a clue to the moods and their process of reduction in all the 4 figures. *Barbara* itself indicates that mood of the first figure which has all its propositions universal affirmatives. The lines are:

Barbara, Celarent, Darii, Ferioque prioris; Cesare, Camestres, Festino, Baroco, secundæ;

Tertia Darapti, Disamis, Datisi, Felapton,

Bocardo, Ferison, habet: quarta insuper addit

Bramantip, Camenes, Dimaris, Fesapo, Fresison.

The words printed in ordinary type are real Lat. words, signifying that 4 moods, whose artificial names are *Barbara, Celarent, Darii, and Ferio*, belong to the first figure; that 4 others belong to the second; 6 more to the third; while the fourth figure contains 6 moods. Each artificial name contains 3 vowels, which indicate the propositions forming a valid mood; thus *CELArent* signifies the mood of the first figure, which has E for a major premise, A for the minor, and E for the conclusion. The artificial words altogether contain exactly the combinations of vowels of the 24 valid moods selected out of the 44 possible ones. These mnemonic lines also contain indications of the mode in which each mood of the second, third, and fourth figures can be proved by *reduction* to a corresponding mood of the first figure. Logicians invented this curious system of artificial words at least 6 centuries ago. The device, however ingenious, is of a wholly unscientific character, but a knowledge of its construction and use has long been expected from the student of logic.

Barbara, St., saint of the Rom. Catholic Church, who suffered martyrdom at Nicomedia in Bithynia in 240 or 306. She was converted to Christianity, and her father on hearing this beheaded her. She is regarded as the patron saint of gunners and locksmiths. Festival day Dec. 4.

Barbarea, genus of perennial herbs of the order Cruciferae, which are found in Europe, Asia, and America. *B. vulgaris*, yellow rocket, winter cress, or herb St. Barbara, grows in Britain as a handsome border plant in gardens, and is used in spring salads. *B. præcox*, early winter cress, is common, to France, Britain, and N. America.

Barbarian (from Gk. *βάρβαρος*, Lat. *barbarus*), term applied by the anc. Gks. to peoples that did not speak the language of Greece. The word is probably onomatopoeic, since it represents the babble of a foreign tongue to the more highly cultured Gk. To the Gks. the whole world was divided into Hellenes and Bs. The Roms. were included by the Gks. in this general classification. At a later stage in the world's hist., when Rome had risen to power, the word was used to signify such peoples as did not

share the culture and civilisation of Rome. Gradually the word ceased to denote only a difference of tongue, and came to mean a difference of manners, customs, and culture. Thus the tribes and peoples outside the boundaries of the Rom. empire were known as the Bs., and they eventually encompassed the fall of Rome. In its present-day usage the word B. is applied almost exclusively with the meaning of lacking in culture and civilisation. Anything rough, savage, and uncouth is said to be barbaric, and the possessor of such qualities is held to be a B.

Barbarossa, see **FREDERICK I.**, Emperor of Germany (Holy Rom. Emperor).

Barbarossa, **Aroodje**, see **BARBAROSSA**, **HORUK**.

Barbarossa, **Horuk** and **Khair-ed-Din**, name of 2 Turkish corsairs who were the terror of the Mediterranean during the early part of the sixteenth century. **Horuk**, or **Aroodje** of **Orooch**, was b. at **Mitylene** c. 1474. He served the emir of **Tunis** and became commander of his fleet. In 1515 he took **Algiers**, but 3 years later the Arabs secured the help of Spain, and **Horuk** was defeated and slain by **Gen. Gomarez**, near **Oran**. The younger brother, **Khair-ed-Din**, took command, and with help from the Sultan **Solyman II.**, he captured **Algiers** (1519) and **Tunis** (1533). In 1536 he was appointed chief admiral of the Turkish fleet, and carried on his piracy up and down the Mediterranean, both on land and at sea, plundering **Port Mahon** (Minorca), the **Ionian Is.**, and **Dalmatia** and defeating the Christian powers in sev. sea-fights. He obtained victories over the fleet of Emperor **Charles V.** in the gulf of **Arta** (1538), near **Crete** (1540), and off **Algiers** (1541). In 1543 he gave his aid to the Fr. in the capture of **Nice**, and made a triumphal return to **Constantinople**, where he d. in 1546.

Barbaroux, **Charles Jean Marie** (1767-1794), Fr. politician, b. at **Marseilles**. In his early years he studied the physical sciences, but his ardent nature caused him to throw in his lot with the revolutionary movement at its outset. He directed the movement in his native tn., and was sent to Paris to bear a complaint to the legislative council against the director of his dept. He was present on 'Aug. 10,' and added to the success of the day by bringing up a battalion of volunteers. He allied himself with the chief of the **Girondin** party, and on being elected as a member for the dept. of **Bouches-du-Rhône**, he sat with that party. He distinguished himself by his fanatical opposition to **Robespierre**. On June 2, 1793, he refused to submit, and went to Caen to organise the **Girondin** resistance there, but was obliged to flee before the troops of the convention. He reached **Bordeaux**, but was there overtaken and made prisoner, after an ineffectual attempt to shoot himself. He was guillotined on July 25, 1794.

Barbary, general name for the most northerly portion of Africa, from Egypt to the Atlantic, and from the N. frontier of the Sahara to the Mediterranean. It thus includes **Morocco**, **Fez**, **Algeria**,

Tunis, and **Tripoli**, together with **Barca** and **Fozza**. The name B. is derived from the name of its anct. inhab., usually called **Berbers** or **Kabyles**. In anct. times this part of Africa prospered under the dominion of **Carthage**. After the fall of **Carthage** it was under Rom. rule, had many flourishing cities, and was regarded as the prin. granary of Rome. After being overrun by the N. barbarians at the fall of Rome it was subdued by the **Saracens** and fl. under their rule as much as at any period of its hist. But the **Saracenic** gov. gradually became a prey to disorder and B. sank into a degraded condition. A number of Turks and renegades acquired it, and subjected it to brutal despotism. Since they could not compete with the European powers in war, they carried on an extensive system of marauding; and the 'B. pirates' were the terror of the merchants of the region. They were suppressed finally at the conquest of **Algiers** by the Fr. The occupants of B. are principally **Bedouins**, **Jews**, **Turks**, and the Fr. colonists in **Algeria**. For a fuller description of the climate, produce, etc., see the various countries comprised in the name B.

Barbary Ape (*Macacus inuus*), belonging to the family of **Primates**, **Cercopithecidæ**, the only monkey found alive in a wild state in Europe. It is tailless, an agile tree-climber, and feeds on fruit. It is a native of N. Africa and the **Rock of Gibraltar**.

Barbary Pirates, see **BERBERS**.

Barbastelle, species of bat, found in **England**, **France**, and **Germany**, with hairy cheeks and lips.

Barbastro, chief tn. of a fertile dist. of the same name, in the prov. of **Huesca**, in **Aragon**, Spain. It is situated on the **Vero**, which is crossed by stone bridges. B. is the seat of a bishop. Pop. 7000.

Barbauld, **Anna Laetitia** (1743-1825), Eng. poetess, b. at **Kibworth**, **Harcourt**, in **Leicestershire**; the daughter of **John Aikin**, D.D. Her first vol. of poems, met with success on its appearance in 1773. In 1774 she married the **Rev. Rochemont B.**, a Fr. Protestant whose family had settled in **England** in the time of **Louis XIV.** They removed to **Palgrave** in **Suffolk**, where Mrs. B. wrote her *Hymns in Prose for Children* (1781), her best work. Mr. B.'s mind, which had never been strongly balanced, gave way entirely, and he d. insane in 1808. Mrs. B. continued to live and work at **Stoke Newington** until her death. See **G. A. Ellis**, *A Memoir, Letters and a Selection from the Writings of Anna Laetitia Barbauld*, 1874.

Barbecue (Sp. *barbacoa*, from the **Haitian**), name given to a framework placed over a fire, on which was placed meat, etc., to be dried or smoked. Later the framework developed into a kind of gridiron on which whole animals could be roasted. In **Cuba** B. is used for the upper floor of a house, where grain, etc., is stored, and in the **U.S.A.** it is used to denote an open-air feast on a large scale.

Barbed, term used in heraldry for an arrow with a pointed or jagged head; also for the 5 green sepals which appear

between the 5 petals of the conventional heraldic rose.

Barbed Wire Act, 1893, Act which enables a local authority to serve notice in writing requiring the occupier of land adjoining a highway to abate the nuisance caused by barbed wire fencing if it be likely to cause injury to persons or animals lawfully using the highway. If he fail to abate the nuisance, a court of summary jurisdiction, on application by the local authority, may order him to do so, and on failure to comply, the authority may execute the order and recover the cost from the occupier.

Barbel (Lat. *barba*, beard), name applied to the genus of fish known as *Barbus*, of the family Cyprinidae, allied to the carp and gold-fish. It has 4 soft appendages from its mouth, and the third ray of the dorsal fin is long, bony, and serrated. It lives in fresh, usually muddy, water in Asia, Africa, and Europe. *B. vulgaris*, common to Europe, is a large, coarse fish, weighing 15 to 18 pounds.

Barbellion, W. N. P., pseudonym of **Bruce Frederick Cummings** (1889-1919), Eng. biologist and writer, b. and educated in Devonshire; son of a journalist. Began as an assistant at the Brit. Marine Biological Association's laboratory at Plymouth and, later, was appointed to the entomological dept. at the Brit. Museum. Suffered from ill health throughout his life in London, succumbing to sclerosis soon after being compelled to resign through illness. His *Journal of a Disappointed Man* (with preface by H. G. Wells), which was pub. shortly before his death, under the pseudonym of W. N. P. Barbellion, describes his early passion for natural hist. It received favourable comment on all sides, and although the circumstances of the author's death enhanced sympathy for his work, the fact remains that it is one of the great psychological revelations in Eng. autobiography. Posthumous works: *Enjoying Life and other Literary Remains* (1919); *A Last Diary* (1920).

Barber (Lat. *barba*, beard, through Middle Eng. and Anglo-Fr. *barbour*), one who is occupied in shaving, hair-dressing, and trimming the beard, etc. In former times the Bs. were joined with surgeons. In France the B.-surgeons were a distinct body under Louis XIV., and in England the Bs. were incorporated in 1461. They were united with the company of surgeons in the time of Henry VIII., and were allowed to let blood and to draw teeth; they were not separated from the surgeons until 1745. The fillet round the B.'s 'pole' signifies the ribbon which was bound round the arm before bleeding.

Barberini, It. family, originally from Florence, raised to a high rank among the Rom. nobility in consequence of the elevation of one of its members, Cardinal Maffeo Barberino, to the papal chair in 1623, when he assumed the name of Urban VIII. (*q.v.*). Urban had 3 nephews 2 of whom were made cardinals, and the third prefect of Rome, and they ultimately, after some vicissitudes, became possessed of the fief of Palestrina,

which had formerly belonged to the Colonna family. The B. have ever since ranked among the first Rom. nobility, sev. individuals of their name having been successively raised to the rank of cardinals, while the lay representative of the family bears the title of Rom. prince, and is possessed of estates at Palestrina, Albano, and in other parts of the Rom. state. In the palace of the B. at Palestrina is the celebrated mosaic taken out of the temple of Fortune at Praeneste. (*See PALESTRINA*.) The palace B. at Rome is a vast structure, built by Bernini, and gives its name to the square before it. It contains a museum, a gallery of paintings, and a library, which was collected by Cardinal Francis B., one of the nephews of Urban VIII. The library is rich in valuable MSS.; its catalogue was printed at Rome in 1681, in 3 vols. folio. There is also a fine villa, with extensive gardens, belonging to the same family, at Rome, near the Thermæ of Diocletian, and another in the neighbourhood of Albano.

Barberini Vase, *see* PORTLAND VASE.

Barberino di Mugello, tn. in Italy, 15 m. N. of Florence, on the Sieve. It manufs. straw hats. In the neighbourhood is the villa of Caffegiolo, the anct. residence of the Medici. Pop. of com., 13,000.

Barberry (*Berberis vulgaris*), species of Berberidaceæ which is frequently found in Britain. The leaves of the shoot appear as spines having in their axils dwarf shoots which bear foliage-leaves and flowers. The flowers grow on a long, pendent stalk; the berry is oval, and is sometimes made into jam. The presence of B. plants is productive of the fungus called rust which develops on grasses.

Barber-Surgeons, *see* SURGEONS, ROYAL COLLEGE OF.

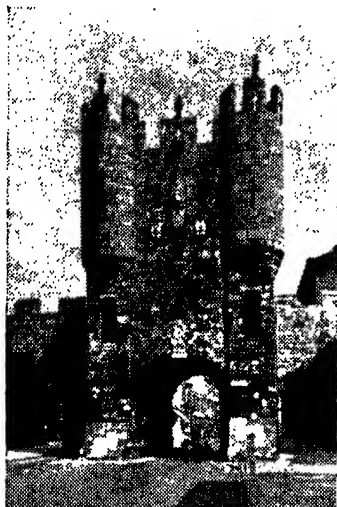
Barberton, tn. in Ohio, U.S.A., founded in 1893 by Barber, president of the Diamond Match Company. It was known as the 'magic city' owing to its rapid growth. It manufs. matches, boilers, chemicals, porcelain, etc. Pop. 24,000.

Barberton, mining tn. of the Transvaal, situated 2830 ft. above sea-level on a side of the De Kaap valley. Gold was discovered in the De Kaap valley in 1886. It is connected by rail with the Lourenço Marques-Pretoria trunk railway. During the Boer war of 1899-1902 the Boers were driven out from here by Gen. French. Present white pop. about 1000; total pop. 24,000.

Barbet (Lat. *barbatus*, bearded), name applied to various birds of the families Capitonidae and Bucconidae common to tropical Africa, Asia, and America, because of the prominent stiff bristles about the mouth which assist them to catch insects. They are bright-coloured, and somewhat resemble the cuckoo in shape. Those of the Capitonidae and Bucconidae are known popularly as thick-heads and puff-birds respectively.

Barbette (Fr. dimin. of *barbe*), name given to the earthen terrace inside the parapet of a rampart, serving as a platform for cannon. This terrace has such an elevation that cannon can be fired over the parapet instead of through

embrasures, thus giving a larger scope. When guns are thus mounted, they are said to be mounted in barbette. In the naval sense a B. is an armoured breast-work, fixed at no great height, behind which the heavy armament of a ship is mounted. The guns fire over the breast-work in the same way as over a B. on land, and are mounted on turntables, whilst the after-ends are protected by armoured hoods. The B. superseded other methods of firing heavy guns on board ship; the *Téméraire* in 1876 was the first Brit. iron-clad to be furnished with Bs.



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Barbey d'Aureville, Jules Amédée (1808-89), Fr. author, b. at Saint-Sauveur-le-Vicomte, France. In 1851 he went to Paris, where he helped to found *Le réveil*. Among his most brilliant novels are *Une Vieille Maitresse* (1851); *L'Ensorcelée* (1854); *Un Prêtre marié* (1865); and *Les Diaboliques* (short stories) (1874). See E. Grélot, *Jules Barbey d'Aureville: sa vie et son œuvre*, 1902.

Barbeyrac, Jean (1674-1729), Fr. jurist, b. at Béziers, of Calvinistic parents. He became teacher of the *belles-lettres* in the Fr. college at Berne, 1697-1711; appointed by the senate of Berne to the chair of law and hist. at the academy of Lausanne, 1711; prof. of law at the univ. of Groningen, 1717, where he d. He made his reputation with *Traité du Jeu* (first ed. 1709). His other works include a translation of Puffendorf's *Law of Nature and Nations*, 1712; a new version of Grotius's *De Jure Belli et Pacis* and *Histoire des Anciens Traités*.

Barbezieux, tn. in the dept. of Charente, France, 19 m. S.W. of Angoulême. There are manufs. of linen and hats. Wheat, oats, and rye are grown in the neighbourhood; the vine is cultivated, and the capons of B. are held in great repute. It is the anct. tn. of Barbesillum, once surrounded by walls and defended by a strong castle. The castle was destroyed by the Eng. in the wars of Guienne, and rebuilt by Rochefoucault, but has since been almost entirely demolished. B. was the bp. of Elias Vinet, a sixteenth-century antiquary and scholar. Pop. 4000.

Barbican, or **Barbacon**, in anct. fortification, usually a small round tower for the station of an advanced guard, placed just before the outward gate of the castle-yard, or ballium. In cities or tns. the B. was a watch-tower, placed at some important point of the circumvallation. It had sometimes a ditch and draw-bridge of its own. The street of London called B. received its appellation from its vicinity to a tower of this sort attached to the city wall. B. was a term likewise used for a hole in the wall of a city or castle, through which arrows and darts were cast out. It also signified a long narrow opening left in the walls to drain off the water from a terrace or platform.

Barbier, Antoine Alexandre (1765-1825), Fr. bibliographer, b. at Coulommiers. He was a member of the council for the preservation of scientific and artistic objects of value. He was instrumental in saving from destruction many collections of books, which had been stored after the suppression of various civil and eccles. establishments, and placing them in public libraries. He was librarian to Napoleon, and administrator of the Crown libraries until 1822.

Barbier, Henri Auguste (1805-82), Fr. poet, b. in Paris. He was a voluminous writer. The work by which he is best known is his *Jambes*, a series of satirical poems in which he paints the life of his time in a rugged, forcible style. Amongst his other works may be mentioned *Lazare*, dealing with the oppressed condition of the Eng. people, and *Il Pianto*, which is concerned with the misery of Italy. B. d. at Nice.

Barbier, Paul Jules (1825-1901), Fr. dramatic author, b. in Paris. He was first known as a poet. Later he wrote many dramas and comedies, often in collaboration with various other authors, and his first 2 pieces were played at the Comédie Française. His best work was, however, done as a librettist.

Barbieri, Francisco Asenjo (1823-94), Sp. musical composer, b. in Madrid. Was first a clarinet player in the National Militia. As a musicologist he conducted researches into anct. musical documents, especially the books of the *vihuelistas* (players of the old Sp. instrument, the *vihuela*) and the *cancioneros* (collections of songs of the fifteenth and sixteenth centuries), thereby reviving the hist. of Sp. music and liberating it from It. influence. Pub. annotated transcriptions of the so-called *Cancionero de Palacio* and *Cancionero musical de Barbieri* (1890),

and a pamphlet on the *Canto de Ulreja*—the pilgrimage chant annexed to the Codex of Calixtus (twelfth century). As composer, his comic operas *El Barberillo de Lavapiés* and *Pan y Toros* have the greatest significance for Sp. music. In them, by far his most important work, 'he saved from oblivion a treasure of rhythmic and melodic elements characteristic of the national folk-lore of the eighteenth century, thus laying the foundation of a distinctive national school' (Pedro Morales). Other comic operas are *El Diabolo Cojuelo*, *Triste Chactas*, *Gloria y Peluca*, *Los Carboneros*, *Un loro y una lechuga*.

Barbieri, Giovanni Francesco, see GUERCINO.

Barbirolli, John (b. 1899), Eng. conductor, b. in London, of It. and Fr. parentage. Educated at Royal Academy of Music. First public appearance as violoncello soloist at Queen's Hall, 1911; toured Brit. Isles and Europe as member of an international string quartet. Founded and conducted B. Chamber Orchestra, 1925. Joined Brit. National Opera Company as conductor, 1926. Conductor and music director of New York Philharmonic Symphony Orchestra, 1937-42. Conductor of Halle Orchestra, Manchester, since 1943. Has pub. sev. arrangements of old classical music.

Barbiton, name of a musical instrument in use among the ancients. It was a kind of lyre.

Barbizon, Fr. vil. near the forest of Fontainebleau, which gave its name to the Barbizon school of artists. This was an outcome of the conflict between the classical and romantic schools of painting which occupied the first half of the nineteenth century. In 1824 the pictures of Constable confirmed the rising generation of artists in their resolve to abandon the pedantry of the old school. The B. school discarded the 'subject' idea, and took nature herself as a guide. The struggle of the school to achieve recognition is the more remarkable, in view of the beauty of their pictures. The B. school includes Corot, Millet, Rousseau, Daubigny, etc.

Barbon, Praise-God, see BARBONE PARLIAMENT.

Barbou, name of a family of Fr. printers, who long rendered themselves famous for the correctness as well as elegance of the works which issued from their presses.

Jean B. the first of the name who is known, was settled at Lyons, where he printed the works of Clément Marot, 1539. His descendants continued to exercise their art for more than 2 centuries. Two brothers of the family settled at Paris, Jean-Joseph B. in 1704, and Joseph B. in 1717. Joseph Gérard B., nephew of the 2 Bs. last mentioned, became a bookseller in 1746, took the printing office of his uncle Joseph's widow in 1750, and soon afterwards engaged in the series of classics which bears his name.

Barbour, Sir David (1840-1928), Eng. financial expert. Was commissioner of paper currency for the Punjab, Madras,

and Bengal, and secretary to Evelyn Baring, later Lord Cromer, when the latter was finance member in India. Pub. his *Theory of Bimetallism* in 1885 as a contribution to the solution of India's financial condition. Represented the Indian Gov. on the royal commission of 1886 to investigate the relation of gold and silver. When he became finance member in India he abandoned his former advocacy of the double standard, and proceeded to set up the gold standard and to shut down the Indian mints. Also investigated the finances of the Orange R. Colony and of the Transvaal after the S. African war, 1903-5. Publications: *The Standard of Value*, 1912; *The Influence of the Gold Supply on Prices and Profits*, 1913.

Barbour, or Barber, John (c. 1316-95), Scottish poet. He took holy orders, and was promoted by King David II. to the archdeaconry of Aberdeen about the year 1356. He obtained permission from Edward III. to reside in Oxford for a time for the purpose of studying (1357), and similar permission to study and travel in England was granted in 1365 and 1368. In 1373 he was clerk of audit to the household of King Robert II. and in 1374 one of the auditors of the exchequer. His fame rests on *The Brus*, which he completed about 1376. It is an epic poem, written in octosyllabic verse, recording the adventures of Robert the Bruce and his companion, Sir James of Douglas. It is written with great spirit; the style is clear and simple and the language more 'modern' than that of his contemporaries. The Edinburgh ed. (1571) is the first printed copy extant. The best eds. are by Skeat (1870-79) (with corrections, 1893-94), and *Barbour's Bruce*, ed. by W. M. MacKenzie, 1909. *The Buik of Alexander* and the *Legenis of the Saints* are not now generally held to be his. See G. Neilson, *John Barbour, Poet and Translator*, 1900.

Barbuda, is. of the Brit. W. Indies, situated in 17° 33' N. and 61° 43' W. It is 62 sq. m. in area, and is a dependency of Antigua, being formerly in possession of the Codrington family. It is densely wooded, and has a lagoon on the W. side. Produces cotton, pepper, and charcoal, and exports phosphate of lime and salt. There is good tarpon and other fishing. Pop. 1000.

Barbusse, Henri (1874-1935), Fr. poet, novelist, etc., b. at Asnières, m. daughter of Catulle Mendès; in 1910, editor of *Je Sais Tout*. He served as an infantryman in the First World War, gaining the Croix de Guerre. After the war he joined the Communist party, and later became the editor of *L'Humanité*. In 1935 he pub. *Stalin*. His book *Le Feu* (1916) was awarded the Prix Goncourt in 1917. It described his war experiences, showing all the horrors of war. Other works: *Pleureuses* (poetry), 1895; *Les Suppliants*, 1903; *L'Enfer*, 1908; *Nous autres*, 1914; *Clarté*, 1918; *La Lueur dans l'abîme*, 1920; *Quelques coins du cœur*, 1921; *Les Enchantements*, 1925; *Manifeste aux intellectuels*, 1927.

Barby, tn. of Saxony, Germany, on the l. b. of the Elbe, 82 m. S.W. of Berlin. It has 2 churches and a seminary school, and there are sugar factories and breweries. Pop. 5000.

Barcarolle, song in the Venetian dialect, sung by the gondoliers at Venice and often composed by them. The airs are generally simple, but full of melody, and frequently have considerable refinement. Formerly most of the gondoliers knew by heart the greater portion of *Gerusalemme Liberata* of Tasso, and sang it in alternate stanzas. The old B. was

contrasting strongly with the factories and busy docks. Formerly the city was surrounded by a strong line of ramparts, but these were pulled down in 1845 because they impeded the natural development of the city. The ground which had been covered by the citadel was laid out in gardens. B. is divided into 2 parts, the old tn. and the new. The former, with its narrow irregular streets, forming a contrast to the wide streets and symmetry of the new tn. The main street of the old tn. is the Rambla, which has a fine avenue of plane-trees. The houses of the



BARCELONA

Paul Popper

Puerta de la Paz and the Avenue of the Ramblas.

sung in parts, at stem and stern of the same boat, by its own gondoliers. The term B. may also be used for an imitation of the song of a gondolier. The well-known airs *La Biondina in Gondoletta* and *O Pescator dell' Onde* are pleasing specimens of this species of song. Chopin's piano B. is also well known.

Barcellona, tn. in Sicily, in the prov. of Messina. It is situated in a broad plain between the mts. and the sea. It abounds in corn, oil, wine, and fruit, and has sulphur baths. It forms one tn. with Pozzo di Gotto, the combined pop. being about 30,610.

Barcelona, prin. manufacturing tn. and seaport of Spain in the prov. of B., formerly part of the prov. of Catalonia; situated on the Mediterranean Sea on a plain between the Rs. Besos on the N. and Llobregat on the S. The surrounding vegetation is of almost tropical luxuriance,

new tn. are chiefly in the modern Eng. style of architecture. The large suburb of Barceloneta lies to the E. Gracia, Las Cortes de Sarria, and Horta are the chief suburbs. B. has been the see of a bishop since 383 and contains many eccles. buildings. The cathedral, erected between the thirteenth and fifteenth centuries, is a fine example of Sp. Gothic architecture. It contains the tomb of Santa Eulalia, the patron saint of the city, and its stained-glass windows are among the finest in Spain. The univ., founded in 1430, was suppressed in 1741, but restored in 1841. There are also many schools and colleges of art, science, and medicine, libraries, hospitals, charitable institutions, and sev. theatres. The prin. manufs. are silk, woollens, cottons, lace, hardware. Its fabrics are much inferior to Eng. wares. The harbour is an excellent one, with a maximum depth of 36 ft. The pop. is

1,109,000 (1944). Area of prov. of B. is 2890 sq. m., and its pop. 1,980,000 (1944). B. is the headquarters of Catalan art and literature, and was the centre of revolutionary Carlist and republican movements, its inhab. being the most restless, though most progressive, of the Sp. people. Many interesting historical events are connected with B. It is said to have been rebuilt by Hamilcar Barca, father of the great Hannibal, about 233 B.C. It was held by the Romans, Goths, Moors, and Franks, and, with the prov. of which it is the cap., was made an independent country about A.D. 864, and incorporated with Aragon 1164, the last count becoming king. The city has suffered much by war and plague. The siege by the Fr. in 1794 was relieved by the approach of the Eng. fleet, commanded by Adm. Russell, but the city was taken by the earl of Peterborough in 1706. It was bombarded and taken by the duke of Berwick and the Fr. in 1714, and was taken by Napoleon in 1808 and retained until 1814. It revolted against the queen in 1841, and was bombarded and taken in Dec. 1842 by Espartero. Frequent insurrections have been raised here. An exhibition was opened by Alfonso XII. in Mar. 1877. In Mar. 1882 there were riots on account of the Fr. treaty, and Catalonia was in a state of sieze. In 1856 a Progressist rebellion caused much bloodshed, and in 1874 the Federalists raised an insurrection here. In 1916 there was again serious friction in B.; 7 years later the city was the scene of a general strike, which led to conflicts between the Syndicalists and the police; and in 1923 the prov. suffered a military revolt, and was for a time under martial law. A tube railway was opened in 1924. In 1924 King Alfonso visited the city, and, as an earnest of improved relations between Catalonia and Castile, was presented with a fine dwelling-place, the Pedralbes Palace, in the suburb of Sarria. In 1929 an international exhibition was opened at B. In 1931 a Catalan Republic was proclaimed, the Sp. Republican Gov. issuing a decree whereby the Catalan Gov. was given a free hand in the organisation of the 4 provs. forming Catalonia, which thus became autonomous in respect of its own domestic affairs. Many fine buildings and large areas of the city were destroyed in the bombing attacks from the air during the Sp. Civil war, 1936-39. The first of these raids by Gen. Franco's It. auxiliaries was on Jan. 30, hundreds of persons being killed. The city had, towards the close of 1937, replaced Valencia as the Republican Gov.'s cap., and, simultaneously, Franco blockaded the E. coast of Spain from his naval base at Palma in Majorca, thus accentuating the difficulties of the large pop. of the city. In Mar. 1938, concurrently with the Nationalists' rapid advance on the Aragon front, relays of their bombers attacked B. from the air, thousands of persons being killed and injured. Anglo-Fr. protests were sent in that month, and were apparently not without effect. The city held out bravely for many months under its volunteer forces formed from trade

unionists, Anarchists, and Socialists, who had composed their differences and mutual animosities in order to offer a more effective resistance; but in Jan. 1939, the Republican resistance in Catalonia collapsed and B. surrendered on Jan. 26, Franco entering in triumph on Feb. 21.

Barcelona, tn. and port of Venezuela, the cap. of state of Bermudez, 12 m. by rail from Guanta; has salt works and coal mines, and exports coffee, sugar, and cacao. Pop. 16,000.

Barchamps, Charles Melchior Artus, Marquis de (1760-93), Fr. Royalist leader in the revolt of La Vendée. He took part in the Amer. war of Independence. On his return to France he was made a captain of the Fr. grenadiers, and was in this service on the outbreak of the Revolution. Being a strong Royalist he returned to his château and remained in retirement until he was chosen a leader of the revolt in La Vendée. To his skill and judgment much of the success of the Vendéens was due. Dissensions broke out amongst them, and finally, at the sanguinary encounter between revolutionists and royalists at Cholet in 1793, B. was mortally wounded. He d. the next day, commanding with his dying breath that the republican prisoners whom his followers had sworn to massacre in revenge for his death should be spared.

Barokhausia, **Barkhausia**, or **Borkhausia** (after Moritz Borkhausen, a Ger. who pub. a botanical work in 1790), name of a genus of Compositæ which has 2 wild (besides an introduced species, *B. setosa*) species in Britain. *B. taraxaci folia* and *B. foetida* have yellow flowers; the former grows in limestone dists. and the latter in chalky places. *B. setosa* is a native of Germany.

Barclay, **Alexander** (c. 1475-1552), poet, b. probably in Scotland, and of Scottish birth, although most of his life was spent in England: chaplain of the college of Ottery St. Mary, Devon, later a monk at Ely and Canterbury, and the rector of All Hallows, Lombard Street, London. His place in literature rests on *The Ship of Fools of the Worlde* (1509), an adaptation in Chaucerian verse of Sebastian Brant's *Narren schiff* (1494), a satire of the social vices of the age. His other works are the *Egloges* (c. 1513 or 1514), the earliest Eng. pastoral, *The Myrrour of Good Manners* (1523), and a translation of Sallust's *Jugurtha*, together with other translations. See T. H. Jamieson (ed.), *The Ship of Fools*, 2 vols., 1874; J. W. Fairholt (ed.), *The Citizen and Uplandishman* (5th eclogue), 1847; *The Myrrour of Good Manners*, Spenser Society reprint, 1885; A. Popen, *The English Versions of the Ship of Fools*, 1925.

Barclay, **Florence Louisa** (1862-1921), Eng. novelist, b. at Limsfield, Surrey; daughter of the Rev. Samuel B. Charlesworth, rector of that par. In 1881 she married the Rev. Charles Wright B., vicar of Little Amwell, Herts; she d. at Limsfield, 1909. Her works include: *The Rosary*, 1909; *The Following of the Star*, 1911; *The Mistress of Shenstone*, 1911; *Through the Postern Gate*, 1912; *The Broken*

Halo, 1913; *The Wall of Partition*, 1914; *Returned Empty*, 1920.

Barclay, John (1582-1621), Scottish writer, *b.* in France, son of William B. (*q.v.*). He came to London with his father and pub. a satire in Lat. on the Jesuits, *Euphormionis Lusini Satyricon*, 2 parts, 1603-07, and *Icon Animorum*, 1614. He subsequently was reconciled to Catholicism. He *d.* in Rome. His popular political romance, *Argenis*, also written in Lat., was pub. posthumously. See Jules Dugas, *Satyricon*, Paris, 1880; Dupond, *L'Argenis de Barclay*, Paris, 1875.

Barclay, John (1734-98), Scottish divine, was educated at St. Andrews and became assistant minister at Fettercairn, 1765. His opinions offended the Presbytery, which was supported by the General Assembly, and B. left the Church and founded the sect of the Bereans (*q.v.*). See memoir in collected works by Thomson and Macmillan, 1852.

Barclay, John (1758-1826), Scottish surgeon, nephew of the founder of the Bereans, *b.* in Perthshire; studied medicine at St. Andrews and Edinburgh; M.D. 1776. In 1806 he was lecturer in anatomy to the College of Surgeons. He pub. anatomical works, and was a pioneer of the movement for establishing surgical and pathological museums.

Barclay, Robert (1648-90), Scottish theologian, *b.* at Gordonstown, Morayshire. His father, Col. David B. of Ury, had served under Gustavus Adolphus. Robert was educated at the Scots College, Paris. Joining the Quaker society with his father in 1666, he was a strong controversialist with opponents, and suffered persecution. His *Apology for the True Christian Divinity* (Lat. 1676, Eng. 1678) is still a standard work of Quaker doctrine. He travelled with Penn and Fox, and was made nominal governor of the Quaker settlement of E. New Jersey by James II., 1682. He *d.* at the family estate of Ury. *Life* by M. C. Cadbury, 1912.

Barclay, Sir Thomas (1853-1941), Scottish lawyer, *b.* at Dunfermline, educated at the Univ. College, London, and at the univs. of Paris and Jena. In 1876 he became Paris correspondent to *The Times*, was called to the Bar in 1881, and in the following year gave up journalism to practise Fr. law. His life was devoted to fostering amicable relations between Great Britain and other countries, and he travelled widely for that purpose. He founded the Franco-Scottish Society in 1895, and the International Brotherhood Alliance in 1905. He was knighted in 1904, and sat as Liberal M.P. for Blackburn in that year. He was known as an authority on international law, and his numerous works include: *Problems of International Practice and Diplomacy*, 1907; *International Law and Practice*, 1917; *New Methods for Adjustment of International Disputes*, 1918; *Law and Usage of War*, 1918; *Collapse and Reconstruction*, 1919; *Wisdom of Lang-sin*, 1927.

Barclay, William (1546-1608), Scottish jurist, father of John B. (*q.v.*), the author of *Argenis*, studied law under

Cujas at Bourges, and became prof. of law at the univ. of Pont-a-Mousson. In 1605 he had a dispute with the Jesuits and went to England, but in 1604 was prof. of law at Angers, where he *d.* His chief legal work is *De Regno et Regali Potestate*, 1600; his attack on the temporal power of the Pope, *De Potestate Papae*, was ed. by his son, 1609, and was answered by Bellarmine's *De Potestate Summi Pontificis*, 1610.

Barclay-Allardice, Robert (1779-1854), Scottish pedestrian, generally known as 'Captain Barclay', was a descendant of the Barclays of Ury. He served in the Walcheren expedition. In his great walk he completed 1000 m. in 1000 successive hours, at Newmarket, 1809. His time varied from 14 min. 54 sec. at the start to 21 min. 4 sec. at the close.

Barclay de Tolly, Michael Andreas (1761-1818), Russian general, *b.* in Livonia, of an old Scottish family settled there in seventeenth century; distinguished himself against the Turks (1788), the Swedes (1790), and in Poland (1794). He fought (1806) as major-general at Pultusk and at Eylau, where he lost an arm. In 1808-9 he commanded in Finland, and his daring march across the ice of the gulf of Bothnia and capture of Umeo is famous. Minister of war (1810-1813), he and Bagration commanded the 2 armies against Napoleon, 1812. He was superseded by Kutusov after his defeat at Smolensk and left the army. He resumed command at Dresden, Kulm, and Leipzig, and was made field marshal, 1814, and Prince Bogdanovitch, 1815.

Barclays Bank, one of the 5 big banks or banking amalgamations of Great Britain. The nucleus of the present bank dates back to the eighteenth century, the founder of the London business being John Freame, a goldsmith, whose son and successor, Joseph, took James Barclay, a brother-in-law, into partnership, since when the Barclay family have always had a member in the business. B. B. was registered in 1896 as Barclay and Company Ltd., to acquire the banking businesses of Barclay, Bevan, Tritton, Bouverie and Company, and Ransom of London, and of Gurney and Company of Norwich, some of which banks were founded in the seventeenth century. Other concerns, such as United Counties Bank and the London and Provincial and South Western Bank, were absorbed during the First World War, and altogether over 40 banks have been merged in the amalgamation, the name being changed to the present style in 1917. B. B. also controls B. B. (Dominion, Colonial, and Overseas), which latter was incorporated in 1836 as the Colonial Bank and re-incorporated in 1925 under its present name. In 1896 the paid-up capital was £2,000,000 and the reserve £1,000,000, with deposits amounting to over £26,000,000. To-day, the authorised capital is £20,000,000; the issued capital £15,858,217; and the unissued 567,411 'A' shares (of £4) and 1,872,139 shares which can be issued as 'B' or 'C' shares (of £1). The total reserve at June 1948

was £12,250,000. The bank does large business in overseas investments. The authorised capital of B. B. (Dominion, Colonial, and Overseas) is £10,000,000, and the issued capital £7,121,500.

Bar-cochba, or **Bar-kokba**, Heb. 'son of a star' (Num. xxiv. 17), name of one Simon or Simeon, leader of the last Jewish revolt from Rome (A.D. 132-35). Nothing is known of his origin; the rabbi Aquiba recognised him as the Messiah. He was for a time successful, retaking Jerusalem. The Romans, under Julius Severus, captured Jerusalem (135), when B. was slain; the rebellion was ended with great slaughter at Bethar. To later rabbinical writers he is known as Bar-cochba, 'son of deceit.'

Barcochebas, see **BAR-COCHBA**.

Barcoo River, see **COOPER'S CREEK**.

Bard, name which the Celtic peoples applied to their minstrels, mentioned by classical writers as early as 200 B.C. Like the 'scops' of the A.-S. and the 'skalds' of the Scandinavians, they celebrated in song, to the accompaniment of the harp, national victories and the deeds of great men. They led armies to battle, and they sang before their prince or chieftain in the hall. They fl. in Wales during the sixth century, when Taliesin, Aneurin, and Llywarch lived. King Howel Dda is supposed to have defined their privileges as court Bs. in A.D. 940, and the laws of the order appear to have been regulated again by Gryffyth ap Conan about 1078. Elsteddfods were held at Caerwys, Aberffraw, and Mathra-val, when the Bs. competed with each other in skill, and judges, appointed by Welsh princes, awarded suitable degrees and privileges. On the conquest of Wales (1284), Edward I. is supposed to have suppressed the Bs., as promoters of sedition, but the bardship was revived by later kings, and existed down to the time of Queen Elizabeth. The elsteddfods were discontinued about this time, but were revived about 1822. Many early legends and ballads and much of the Arthurian cycle were handed down for generations in song by means of the Welsh Bs.

In Ireland the order was probably hereditary, and appears to have been divided into 3 classes: (1) The Filidha, who sang in the service of war and religion. (2) The Breitheamhain, who promulgated the laws in a recitative chant. (3) The Seanachaidhe, who chronicled the family hist. of the patrons to whom they were attached. Besides these 3 orders, there were minor Bs., called after the instruments they played. The harp, said to have belonged to Brien Boiroimh, who fell in the hour of victory against the Danes on the plain of Clontarf, is preserved in the museum of Trinity College, Dublin. After the conquest of Ireland by Henry II., the number of Bs. declined, though many chiefs retained them to keep alive a national feeling by their songs and legends. Turlough O'Carolan (1670-1737) was the last Irish B.

Less is known of the Scottish Bs., but it is supposed that their status was very

similar to that of the Irish Bs. They existed in the Highlands down to the seventeenth century.

The name B. has in modern times been applied to poets, e.g. to Shakespeare, the 'B. of Avon,' and to Burns, the 'Ayrshire B.'

See E. Evans, *Specimens of the Poetry of the Antient Welsh Bards*, 1764; J. Walker, *Historical Memoirs of the Irish Bards*, 1786; W. F. Skene, *Four Ancient Books of Wales*, 1868; T. Stephens, *Literature of the Kymry*, 1873; E. Jones, *Relics of the Welsh Bards*, 1884; D. Hyde, *A Literary History of Ireland*, 1899; D. D. Evans, *Ancient Bards of Britain*, 1906.

Bard, or **Bardo**, vil. in Italy, situated on the Dora Baltea, about 20 m. S.E. by S. from Aosta by rail. It has a strong fortress. Pop. 500.

Bardarion, see **AXIUS**.

Bardejov, or **Bartfeld**, tn. of Czechoslovakia on the R. Tapola, 28 m. N. of Presov. It has a thirteenth-century Gothic church and a fifteenth-century Rathaus, while 2 m. to the N. are famous chalybeate springs. The first general Protestant synod of Hungary met here. Pop. 7000.

Bardesanes (A.D. 154-222) (**Bar Daisan**, son of Daisan, a riv.), called the 'last of the Gnostics,' Syrian theologian, b. at Edessa. For some time he lived at the court of Abgar, but when Edessa was taken by Caracalla (217), he fled into Armenia. It was largely through the influence of B. that Christianity was first introduced into Edessa. He wrote 150 hymns, in which he expressed his doctrines, and which had a far-reaching influence. B. was accused of polytheism, a charge which he denied, and Eusebius speaks of him as having been a Valentinian Gnostic. He upheld that evil was the revolt of matter against spirit, and yet he maintained that the devil was an independent, existing spirit. He denied the doctrine of the resurrection of the body, and preached that Christ's body was not living flesh, but an illusory likeness sent by God. The book of *Laws of Countries*—Cureton, *Spicilegium Syriacum*, London, 1855, and the *Ante-Nicene Fathers*, New York, 1895—has been ascribed to B., but is probably the work of a disciple.

Bardi, tn. in the prov. of Piacenza, Italy, 31 m. S.W. of Parma. Pop. (com.) 7000.

Bardia, vil. on the N. coast of Africa, in the prov. of Cyrenaica, about 60 m. E. of Tobruk. It came into prominence during the Second World War when, on Dec. 19, 1940, a Brit. force captured it from the Its. The Gers, however, retook it on Apr. 12, 1941, and in Jan. the following year the Ger. garrison was subjected to an attack from the R.A.F. and Free Fr. air force, the place being finally recaptured in Nov. 1942.

Bardili, Christoph Gottfried (1761-1808), Ger. philosopher, b. at Blaubeuren in Württemberg. He became a prof. of philosophy at Stuttgart, and as an exponent of rational realism he anticipated Hegel and Schelling. His chief work, in

which he criticised Kant, is the *Grundriss der Ersten Logik*, 1800.

Bardowick, tn. of Hanover, Germany, 4 m. N. of Lüneburg, on the Ilmenau R. It was formerly an important commercial centre, but in 1189 Henry the Lion, duke of Saxony, destroyed the tn. There are ruins of a cathedral incorporated in a fourteenth-century Gothic church. Pop. 2400.

Bardsey, is. off Carnarvonshire, N. Wales, about 2 m. long by 1 m. broad. It is only accessible on the S.E. side, where there is a small well-sheltered harbour. There is a hazardous trade in taking eggs from the sea-cliffs. The soil is fertile, and produces barley and wheat. B. (or Bards' Ey, the Isle of Bards) was, according to legend, the last retreat of the Welsh bards. There was formerly an abbey, which was suppressed by Henry VIII. Numerous graves lined with stone, a large building, said to have been the abbot's lodge, and a ruined chapel or oratory are the only remains. Pop. about 120.

Bardstown, or **Bairdstown**, co. seat of Nelson co., Kentucky, U.S.A., near the Beech Fork of Salt R., and on the Louisville and Nashville railroad; 39 m. S.E., by rail, of Louisville. It has sev. educational institutions, besides various manufs., distilleries, saw-mills, and a wagon factory. There is trade in cattle, hogs, and grain. Pop. 2000.

Barbones Parliament, name of the 'Little Parliament' (July 4 to Dec. 12, 1653), summoned by Cromwell after his violent dissolution of the 'rump' of the Long Parliament. It consisted of 140 selected nominees of the congregations in each co. Its unruliness and incapacity led to its dissolution at the request of the moderates. The name, given to it by its opponents, is due to the member for London, Praise-God Barbon or B. (1596-1679), a rich leather-seller and 'fifth monarchy' man. He does not seem to have taken any prominent part in the parliament. He was imprisoned, 1661-1662, for his opposition to the Restoration. Consult H. A. Glass, *The Barbones Parliament*, 1899.

Barège, gauze-like fabric, used for women's dresses. It is a mixture of silk and worsted, or cotton and worsted, and is generally produced in light colours. The best quality is manuf. in France, where it is called *crêpe-de-barège*, from the tn. Barèges, where it was first made; also produced at Bagnères de Bigorre.

Barèges, watering-place with warm sulphur springs, Hautes-Pyrénées, France. It is 4040 ft. high, and its season is in summer. The mixed silk and wool fabric, barège, is made at Bagnères de Bigorre, 25 m. S.W.

Barcelly, tn. and dist., B. or Rohilkhand div. of the United Provs., India, area of dist. 1580 sq. m.; pop. 1,000,000; of tn. 193,000. This dist. is highly cultivated and is irrigated by the Rohilkhand canal system. There is an important native college in the tn.

Barents, Willem (d. 1597), Dutch explorer. His first expedition, 1594, in

search of a N.E. passage to Asia, surveyed the W. coast of Novaya Zemlya; the second, 1595, failed; he was chief pilot to the last journey, 1596. He discovered and named Spitsbergen and Bear Is., rounded Novaya Zemlya, and was the first to winter in the ice. On the return in open boats he d. The hut where they wintered was found in 1871, and B.'s journal in 1875. B. Sea and Is. are named after him. See Hakluyt Society translation of De Veer's *Three Voyages of Barents*, 1876.

Barents Island, is. in the E. of the Spitsbergen Archipelago, named after Willem Barents (q.v.).

Barents Sea, that part of the Arctic Ocean which lies between the European mainland, Novaya Zemlya, Franz-Josef Land, and Spitsbergen. Its average depth is 100 fathoms. The part near the Kola coast is called the Murman Sea. See F. Nansen, *The Norwegian North Polar Expedition*, 1900-8.

Barère de Vieuzac, Bertrand (1755-1841), Fr. revolutionist, b. at Tarbes; was elected as deputy for Bigorre to the States General, 1789, and reported the debates in his paper, the *Point du jour*. He joined the Republican party after the flight to Varennes. As deputy for Hautes-Pyrénées to the National Convention, 1792, he first was a Girondist, but later one of the Mountain, and voted for the death of the king. He closed his speech with the phrase, 'the tree of liberty does not grow if it be not watered with the blood of kings.' He was member of the first and second Committees of Public Safety, 1793, supporting Robespierre, but withdrawing at his fall. He was imprisoned after the Terror, but escaped. He was employed by Napoleon, turned Royalist in 1814, but was exiled as a regicide in 1815. He was the last survivor of the Committee of Public Safety. See Aulard, *Les Orateurs de l'assemblée constituante*, Paris, 1905.

Baretti, Joseph (1719-89), It. writer, b. at Turin; he came to London in 1751 as a teacher of It.; he became secretary to the Royal Academy, and pub. the *Italian Library*, 1757. His journal *Frusta Letteraria* (the literary scourge), Venice, 1763-65, was marked by bitter but independent criticism. He was known to Johnson and his circle, and figures in Boswell's *Life*. He was tried on the capital charge of killing a man who assaulted him in London, 1769; the evidence of Johnson, Burke, and Garrick as to his character served to secure his acquittal. His *Dictionary and Grammar of the Italian Language and Lettere Famigliari*, trans. 1770, were well received.

Barfleur, seaport tn. in the dept. of La Manche, France, 15 m. from Cherbourg. It was an important harbour for the Channel passage to England in the Middle Ages. The *White Ship* sank off the port with Henry I.'s only son William. Off Cape B. was fought the first of the series of naval battles between Tourville and Russell, May 1692, known in Eng. hist. as the battle of La Hogue (q.v.).

bankers and financiers, sev. members of which were distinguished as statesmen and administrators. There are 4 peerages in the family, the earldoms of Northbrook and Cromer, the baronies of Ashburton and Revelstoke. John B. came from Bremen, in Germany, and started a cloth factory near Exeter. His son Francis (1740-1810) founded the banking house of B. Bros. in 1770, was director and chairman (1792) of the E. India Company, supported Pitt in Parliament (1784-1806), and was made a baronet, 1793. At his death the firm was the first banking house in Europe. His eldest son, Sir Thomas (1772-1848), was a great art collector, and the firm was managed by his second son, Alexander (1794-1848), who extended its influence in America, was president of the Board of Trade, 1834, and made Baron Ashburton, 1835. He settled the Canada-Maine boundary question, 1842. At his death the management of the firm passed to Thomas (1799-1873), second son of Sir Thomas, and on his death to Edward (1828-97), son of Henry, third son of the founder of the firm, who was created Baron Revelstoke, 1885. It was during this period that the continued default of the Argentine Gov. involved the firm in such difficulties that a financial crisis ensued (1890), only relieved by the action of the Bank of England and the prin. London joint-stock banks, in taking over the enormous liabilities of the firm; to this end the governor of the Bank of England secured £3,000,000 in gold from the Bank of France. B. Brothers was reorganised as a limited company. Sir Thomas B.'s eldest son, Sir Francis (1796-1866), was chancellor of the exchequer (1839-44), first lord of the Admiralty (1849-52), and created Baron Northbrook, 1866; his son Thomas (1826-1904) was made Earl Northbrook 1876, was viceroy of India (1872-76), and first lord of the Admiralty (1880-85). The youngest son of Henry B., a brother of the first Lord Revelstoke, was Evelyn (1841-1917), first Earl Cromer (q.v.).

Baring, Alexander and William, see ASHBURTON, BARONS.

Baring, Sir Evelyn, see CROMER, EARL OF.

Baring, Maurice (1874-1945), Eng. novelist and poet, son of Lord Revelstoke, was educated at Eton and Trinity College, Cambridge; and in 1899 entered the diplomatic service. After some months at the Foreign Office he became attaché at the embassy in Paris, and later was transferred to Copenhagen, but in 1904 decided to abandon diplomacy for a literary career. When the Russo-Jap. war broke out, however, he became war correspondent of the *Morning Post* in Manchuria; special correspondent in Russia, 1905-8; Constantinople, 1909; and for *The Times*, in the Balkans, 1912. These experiences are described in *Letters from the Near East* (1909), *The Puppet Show of Memory* (1922), and in the novels *Tinker's Leave* (1927) and *Friday's Business* (1933). During the First World War he served in the Royal Flying Corps, becoming wing-

commander, and was made chevalier of the Legion of Honour. During his brief period in the diplomatic service he also wrote some poetical plays: *The Black Prince* (1899), *Gaston de Foix* (1903), *Proserpine* (1908), and *Desiderio* (1906). Later came short stories, *Orpheus in Mayfair* (1909), fairy tales, essays, and skits in profusion. His annotated anthology, *Have You Anything to Declare?* (1936), revealed the range of his acquaintance with the world's greatest literature, classical and modern, from which his original work drew its inspiration. His first novel, *Passing By*, appeared in 1921. The best of his subsequent novels are *Cat's Cradle* (1925), *Daphne Aedeane* (1926), *The Coat without Seam* (1929), *Robert Peckham* (1930), and *The Lonely Lady of Dulwich* (1934). It was during his journalistic career that he became a Rom. Catholic, and some readers saw in these novels a kind of Rom. Catholic propaganda. His outlook in European affairs, knowledge of foreign traditions, customs, and literature were remarkable as may be gathered from his *A Year in Russia* (1907) and *The Mainsprings of Russia* (1914), as well as in his essays. His *Collected Poems* were pub. in 1925. His final position in literature may establish him as one of the most subtle, profound, and original of later Eng. writers. See Dame E. Smyth, *Maurice Baring*, 1938; L. Lovat, *Maurice Baring: a Postscript*, 1947.

Baring-Gould, Sabine (1834-1924), Eng. author, b. at Exeter, educated Clare College, Cambridge; became rector of E. Mersea, Essex, 1871, and of Lew Trenchard, Devon, 1881. From 1854 onwards he wrote books of folklore, mythology, ant. customs, and of travel, such as the *Book of Were Wolves*, 1865; *Curious Myths of the Middle Ages*, 1866; *Strange Survivals*, 1892; *Family Names and their Story*, 1910; *Cliff Castles and Cave Duellings of Europe*, 1911. His theological works include *The Lives of the Saints*, 17 vols., 1872-89. From 1871 to 1873 he ed. the *Sacristy*, a quarterly devoted to the art and literature of the Church. His life of R. S. Hawker (q.v.), *The Vicar of Morwenstow*, 1875, was much criticised. His *Songs and Ballads of the West*, 1889-1891, contains a valuable collection of folksongs. Of his novels the best known are *Mehalah*, 1880; *John Herring*, 1883; *Court Royal*, 1886; and *Nebo the Nailor*, 1902. He was also the author of the following hymns: *Onward, Christian Soldiers*; *Now the day is over*; and *Through the night of doubt and sorrow* (trans. from Dan.). His *Early Reminiscences* appeared in 1923. See S. M. Ellis, *Mainly Victorian*, 1925.

Baringo, Lake, in Kenya, about 40 m. N. of the equator. Its elevation is 3325 ft. and length about 16 m. Its position was not accurately known till 1883, when it was first seen by Joseph Thomson.

Baris, genus of coleopterous insects, belongs to the family Curculionidae, or weevils. It feeds on dead parts of trees, and is consequently not injurious to any

way. *B. lignarius* feeds upon the elm-tree both in the larva state and that of the perfect insect. The little weevil selects a hollow tree, enters the dead wood hinder part first, lays its eggs, then dies, and its body thus blocks up the entrance and protects the young.

Barisal, tn., Bakarganj dist., E. Bengal and Assam, Pakistan, on B. R. It has a large riv. trade. The 'B. guns,' strange sounds, like the report of cannon or thunder heard off the mouth of the riv., have not yet been explained. Pop. 30,000.

Barito, riv. of Dutch Borneo, which flows southwards into the Java Sea, after a course of 550 m. It is navigable for some distance up; at high tide the bar at the mouth has over 12 ft. of water. An arm of the B. flows S.W. and joins the Kapuas; from the junction a canal runs to the main stream.

Baritone, i.e. deep-sounding (Gk. *barus*, heavy, *tónos*, tone), name of that range of the adult male voice which lies between a tenor and a bass. It is to be regarded as a high bass rather than a low tenor; compass from the lower A on bass stave to F above the stave.

Barium, a metallic element belonging to the group of alkaline earths. Symbol Ba; atomic number 56; atomic weight 137.36. In 1602 Casciorolus, a Bolognese shoemaker, investigated the properties of heavy spar, and noticed that it became phosphorescent in contact with ignited combustible matter. In 1774 Scheele discovered, in a sample of black oxide of manganese, a new earth, which was afterwards identified with a constituent of heavy spar. This earth was called baryta (Gk. *barus*, heavy) and was shown to be an oxide of a metal by Davy. He succeeded in producing an amalgam of the metallic B. with mercury, but no satisfactory isolation of the metal was accomplished until Guntz, in 1901, obtained an amalgam by electrolysis of a saturated solution of B. chloride; the amalgam was heated in the electric arc to about 1000° C., and the B. obtained in the form of a soft, silver-white metal. The monoxide BaO is obtained by heating the carbonate or nitrate; further heating transforms the monoxide into the dioxide BaO₂. At a still higher temp. the additional oxygen is set free, so that by alternately lowering and raising the temp. oxygen may be absorbed and collected from the atmosphere. This action was the basis of Brin's oxygen process, now obsolete but very successful for a number of years. B. hydroxide is a white soluble powder; the solution is known as baryta water and readily absorbs carbon dioxide from the air. B. chloride is obtained by the action of hydrochloric acid on witherite (i.e. native B. carbonate, BaCO₃); it is used in the preparation of the artificial sulphate, which is used as a pigment under the name *blanc fixe*, or permanent white, the impurities in the air having no effect upon it. A mixture of B. sulphate and zinc sulphide forms the very important white pigment known as lithopone. B. nitrate is a powerful oxidising agent, and like the

chlorate is used for the production of 'green fire' in pyrotechny. B. may be detected by the apple-green colour imparted to the Bunsen flame by the metal and its salts, and by the immediate precipitation of the salts by a solution of calcium sulphate. B. salts are very poisonous, causing death by paralysing the heart. In small doses they strengthen the muscular power of the heart, but are seldom employed. The old sulphur well at Harrogate and the waters at Llangam-march are said to contain about 6 grains of B. chloride per gallon.

Barium sulphate, see BARYTES.

Bar-Jesus, see KLYMAS.

Barjols, tn. in the dept. of Var, France. Its chief exports are figs, raisins, and olives. Pop. 2500.

Bark, outside covering of the trunks and branches of trees, consisting of dried-up tissues, which often belong to different tissue-systems, lying outside the active cork-cambium of stems. The first phellogen (cork-producing tissue) nearly always dies, and a second phellogen produces a cork layer cutting off the supply of water to the outside layers, and consequently aids in the formation of the B. It may be either scaly or ringed: in the first case only isolated patches of tissue have become B. and as the trunk of the tree increases in size the B. becomes torn in scales; in the second case concentric rings are formed and the B. forms a complete ring. Examples of the former are the pine, plane, and larch, of the latter, vine, clematis, birch, and honey-suckle.

The uses of B. are many and various. In savage lands, canoes, shields, baskets, and clothing are made of it. In tanning it is a most valuable object, and the *Quercus suber*, an oak of S. Europe and N. Africa, produces an outer covering which is rich in tannic acid. Sev. other varieties of oak, such as *Q. robur* and *Q. tinctoria*, are also much used, while *Acacia decurrens* and *Abies canadensis*, or hemlock spruce, are other plants containing tannin. The bast fibres are employed in commerce, examples of which are flax, jute, and hemp. Medicinally B. is frequently noteworthy, the best-known being cinchona; other kinds are angostura, cascarilla, cascarilla, and witch hazel. Cinnamon is obtained from B., the wild cherry is valued in cough-mixtures, pomegranate B., or granatum, is used to expel tape-worms. Resins, gums, and balsams may be produced from various barks.

Bark, Peruvian, see CINCHONA.

Bark (ship), see BARQUE.

Barkal, or **Jebel Barkai**, flat-topped, isolated rock, rising precipitously from the desert on the r. b. of the Nile, some distance above the vil. now called Merawi. It was in anct. times considered as a holy mt. by the Egyptians. Its interest in modern times is in the excavations and researches which have been carried on in the neighbourhood. Many pyramids, varying in height from 35 to 60 ft., and 6 temples are found.

Bark-bed, term used in horticulture for a bed made of waste bark from tanneries.

When placed in the brick pit of a forcing-house the bark ferments, and the warmth and moisture thus produced assist in the development of the tender plants.

Bark-beetles, coleopterous insects of the family Bostrichidae, but the name is often given loosely to beetles of other families. They do much damage as they live on the bark of forest-trees.

Barker, Benjamin (1776-1838), Eng. landscape painter, brother of Thomas B. (q.v.). Exhibited at the Royal Academy between 1800 and 1821. He pub. a set of 48 views engraved by Theodore Fielding.

Barker, Edmund Henry (1788-1839), Eng. scholar, b. in Yorkshire; educated at Trinity College, Cambridge. He assisted Samuel Parr at Halton and went to Thetford. His chief work was the revision of Stephanus's *Thesaurus Græcæ Linguae*, 1816-28, severely criticised by Blomfield. He d. in great poverty.

Barker, Sir Ernest, Eng. historian and classical scholar, b. Sept. 25, 1874; educated at Manchester Grammar School and Balliol College, Oxford. In 1908 he was elected fellow of Merton College; in 1909, fellow and lecturer of St. John's College; in 1913, fellow and lecturer of New College. In 1920 he went as principal to King's College, London, and in the same year became a member of the Consultative Committee of the Board of Education. He remained at London Univ. until 1928, when he became prof. of political science at Cambridge, also being elected fellow of Peterhouse. His works include: *Political Thought in England from Herbert Spencer to To-day*, 1915; *Greek Political Theory*, 1918; *The Crusades*, 1923; *National Character and the Factors in its Formation*, 1927; *Church, State, and Study* (essays), 1930; *The Citizen's Choice* (essays), 1937; *Ideas and Ideals of the British Empire*, 1941; *Reflections on Government and Britain and the British People*, 1942; *Development of Public Services in Western Europe*, 1944; *The Character of England* (ed.), 1947. B is also the editor of Dent's 'Library of Greek Thought.'

Barker, Harley Granville—see GRANVILLE-BARKER.

Barker, Sir Herbert Atkinson (b. 1869), Eng. manipulative surgeon, b. at Southport. Educated for the law, he early displayed such ability for manipulative surgery that he was placed under the tuition of Mr. J. Atkinson, to whose practice he succeeded in 1904. Though he has successfully treated over 40,000 cases of flat-foot, joint abnormalities, etc., he has never received the formal recognition of the medical profession. He was knighted in 1922 for his services in the First World War. In 1936 he gave a demonstration of his methods before an audience of the Brit. Orthopaedic Association, and made a film for record purposes. He was elected manipulative surgeon to Noble's Hospital, Isle of Man, in 1941. His memoirs, *Leaves from my Life*, were pub. in 1927.

Barker, Robert (1730-1806), Irish artist, b. in Ireland; settled in Edinburgh as a portrait painter. In 1788 he produced

the first panorama, that of Edinburgh, following a suggestion of a Ger. architectural decorator, Breisl. He subsequently produced popular panoramas of London, and of naval battles of the time.

Barker, Thomas (1769-1847), Eng. landscape painter, b. near Pontypool, Monmouthshire. He was allowed facilities for copying the works of some Dutch and Flemish masters by a rich coach-builder of Bath named Spackman, who sent him to Rome for 4 years in 1790. He returned to England after this and settled at Bath. Few pictures of the Eng. school have been more widely known than 'The Woodman,' which was engraved by Bartolozzi. His pictures were popular, being engraved on china, linen, and pottery. His best work was the large fresco which he executed in his house at Slon Hill, Bath, representing the 'Inroad of the Turks upon Scio in April 1822.' He was entirely self-taught in his art.

Barker, Thomas Jones (1815-82), Eng. painter, son of Thomas B., b. at Bath. After being given some education in art by his father, he went to Paris in 1834, and was a pupil of Horace Vernet for several years. He exhibited frequently at the Salon, his first picture there, 'Beauties of the Court of Charles II.,' gaining him a gold medal. In 1840 he was awarded the cross of the Legion of Honour for painting 'The Bride of Death' for the youngest daughter of Louis-Philippe. In 1845 he returned to England, and painted the portraits of sev. eminent men, Disraeli amongst them. He went to the Franco-Ger. war, whence he obtained many subjects for pictures.

Barking, tn. in Essex, England. It lies on the R. Roding, 8 m. from Liverpool Street station, London. It is a suffragan bishopric to St. Albans. Of the great nunnery only a gateway remains. All Hallows, B., near the Tower of London, belonged to it. The thirteenth-century church of All Hallows, saved from the Great Fire of 1666, was burnt in the Ger. fire-raid of Dec. 29, 1941. The church's historical records had been placed in safety, and the famous font in the style of Grinling Gibbons escaped damage, being put in the crypt. The church of St. Margaret has some interesting monuments. At B. Creek is the outfall of the N. London sewer. Pop. 51,000.

Barkly, Sir Henry (1815-98), Scottish colonial administrator, educated at Bruce Castle School, Tottenham. In 1845-9 he was M.P. for Leominster as a 'firm supporter of Peel's commercial policy.' 1849, governor of Brit. Guiana. Advocated introduction of coolies and Chinese as labourers, developed colony by introducing railways. 1853-56, governor of Jamaica; 1856, of Victoria; 1863, of Mauritius; 1870-76, of the Cape. K.C.B., 1853; G.C.M.G., 1874.

Barkly East, tn. in Cape Prov., S. Africa, situated 58 m. E.S.E. of Aliwal N. It is the cap. of a dist. of the same name, and stands at an elevation of 583 ft.

Barkly West, tn. in the N. div. of Griqualand W., Cape Prov., 25 m. as

the crow flies from Kimberley. It is the cap. of the dist. of the same name, and possesses diamond mines, in which the 'river stones,' of great value, are found. It is situated at an elevation of 3800 ft. Pop. 5000.

Bar-kokba, see **BAR-COCHBA**.

Barkol, tn. of Dzungaria, in Sinkiang, China, to the N. of the Gobi desert. Near to it is Lake B., which is situated 5100 ft. above sea level.

Barkway, ant. vil. of Hertfordshire, England, about 4 m. S.S.E. from Royston. At the time of the Conquest the lands were divided among 4 great lords into as many manors, and afterwards into 8 manors. It was privileged by Edward I. to have a market on Thursday, but this has been discontinued. Pop. 600.

Barlaam and Josaphat, Christian religious romance popular in the Middle Ages, and trans. into every European language. The Gk. original is attributed to John of Damascus (*f.* early eighth century), but modern writers have traced an earlier Syrian source. The story of the Indian prince Josaphat, and his withdrawal to the wilderness and a life of asceticism through the teaching of the hermit B., is a Christian version of the life of the Buddha. The name Josaphat is a perversion of Bodhisat or Bodhisat (see *Bodhisattra myth under LAMAISM*), and passages seem verbally taken from Sanskrit texts. The identity of the 2 stories was noticed in the sixteenth century, but first stated by Laboulaye, 1859, and proved by Liebrecht, 1860. Further, the lost *Apology of Aristides*, a second-century defence of Christianity, has been found embodied in the story. Both B. and J. were canonised in the E. and Rom. Church. See J. Jacobs, *Barlaam and Josaphat*, 1896.

Barlaeus, or Gaspar van Baerle (1584-1648), Dutch poet and historian, *b.* at Antwerp. Studied theology at Leyden; took orders; prof. of logic at Leyden, 1617; dismissed from his office, 1619, for siding with the Arminians against the Gomarists. Prof. of philosophy at Amsterdam, 1631. He wrote: (1) poems, chiefly in Lat., some in Dutch; (2) a hist. of Brazil, which was then possessed partly by the Dutch. One of his Lat. poems had for its subject the accession of Charles I. His letters were pub. at Amsterdam, 1667.

Bar-le-Duc, or **Bar-sur-Ornain**, cap. of the Fr. dept. of Meuse, on the R. Ornain, and on the Marno-Rhine canal, 158 m. E. of Paris. It manufs. cotton, calico, and hosiery; preserves are made, and there is trade in timber, iron, wool, and wine. The church of St. Pierre dates from the fourteenth century, and contains the tomb of William of Orange. A ruined castle, the ancestral home of the dukes of Bar, overlooks the entrance into Lorraine. The Old Pretender, Chevalier de St. George, lived here for 3 years. It was the bp. of the duke of Guise (1519-63), and Marshal Oudinot (1767-1847), and M. Raymond Poincaré (*q.v.*), president of the Fr. Republic. Pop. 16,000.

Barleria, genus of Acanthaceae found in the E. Indies. A few species grow in

Eng. gardens and hothouses, and of these *B. lupulina*, with its large bracts resembling hops, and *B. prionitis*, a common swamp-plant in Java, are the most remarkable.

Barletta, tn., prov. of Bari, Apulia, Italy. The fine harbour makes it an important seaport for the exports of wine, sulphur, and oil of the dist. Before the cathedral, S. Sepolero (twelfth century), is an antique bronze statue of Honorius. Pop. 46,000.

Barleux, vil. on R. Somme, Franco, S.W. of Peronne. Much hard fighting took place round B., 1915-16. During the battle of the Somme, 1916, it was an important position, and in July of that year was the scene of much bloodshed. In the following Nov. the allied line ran through B.

Barley (*Hordeum*), cercal of anct. culture, which belongs to the order Gramineae. There are 4 unimportant species



BARLEY

of B.-grass in Britain, of which *H. pratense* and *H. murinum* are 2. *H. vulgare* is the cultivated species, growing as far N. as 70°; it is the Scottish bere or bigg, and has its grains in 4 rows; *H. distichum* is a 2-rowed and *H. hexastichum* a 6-rowed variety. *H. caeleste*, the Siberian B., a variety with naked seeds, is cultivated in some parts of Europe, but the grain shakes off so easily as to render bad harvests frequent.

Formerly B. was considered to be of great value as a food in England, but now it is most often converted into malt for brewing and distilling. Ground down into B.-meal it is used for bread-making in N. Europe, and is a food for cattle; it is also made into decoctions for invalids, especially those who have pulmonary complaints, and is extremely soothing in fevers. The varieties known as pot-B. and pearl-B. are very nutritious and wholesome, and may be used in broths, stews, puddings, and as a substitute for rice. The former kind is obtained by depriving the grain of its

outer husk, the latter by rounding it and polishing it in the mill after the removal of the husk. In Scotland a peculiar dish, called sowens, is made of the bran, which is steeped in water and allowed to ferment for sev. days until it becomes acid.

B. grows best in a warm, dry climate; the soil should be richly manured, and the practice of sowing clover, rye grass, or other seeds with it is considered to improve it greatly.

The development of this crop in Empire countries (chiefly India, Canada, and the United Kingdom) showed an increasing trend from 1933. In 1938 the total area under B. in the Brit. Empire was 14,073,000 ac., of which the acreage in India was 6,225,000 and in Canada 4,454,000. The acreage for the United Kingdom was 989,000. The total acreage under B. in foreign countries for that year was 56,894,000. The Brit. Empire produced 5,790,000 tons in 1938-39 and foreign countries 28,639,000 tons. Imports of B. retained in the United Kingdom averaged over 900,000 tons in 1936-38 (as compared with an average of 711,000 tons in 1931-34). This increase coincided with the decline in production in 1936-38. The main sources of the imports into the United Kingdom were Canada (274,000 tons), Russia (188,000 tons), Iraq (155,000 tons), and the U.S.A. (136,000 tons). The Empire is on balance an importer of B., the consistently large imports of the United Kingdom being only partially balanced by the exports from Canada, Australia, and India. Retained imports in 1941 totalled 1,277,000 tons. In June 1945 there were 2,216,000 ac. under B. in Great Britain (as compared with 1,013,000 ac. in June 1939), and the quantities harvested were respectively 2,071,000 and 892,000 tons.

Barley-break, old Eng. country game which was popular in the sixteenth and seventeenth centuries, referred to by Herrick, Sidney, Suckling, and Massinger, and still surviving with modifications in the N. of England and Scotland. It was played by 6 couples, 3 of each sex, placed in 3 adjoining plots of ground, the central one being called 'hell.' The middle couple, always united, had to attempt to catch the other couples as they changed places, these latter being allowed to 'break.' The name may have come from the stack-yard in which it was played.

Barleycorn, John, malt liquor personified and a familiar figure in old Eng. ballads and pamphlets. The song of J. B., from *The English Dancing Master*, 1651, is generally attributed to Robert Burns, but all that Burns did was to alter slightly various parts of it. Also a corn measure—the third part of an inch in length. The term barleycorn is used in old conveyances of land as a synonym for a nominal consideration.

Barley Midge, dipterous insect of the family Cecidomyiidae, allied to the Hessian fly, or *Cecidomyia destructor*. It obtains its name from its destruction of B., while the latter is a speller of wheat.

Barley-sugar, confection made with syrup prepared from sugar, hardened in

moulds and generally twisted into spiral sticks. Originally the sugar was boiled in a decoction of barley.

Barlow, Henry Clark (1806-76), Eng. scholar, b. at Newington Butts, d. at Salzburg. His prin. work is *Critical, Historical, and Philosophical Contributions to the Study of the 'Divina Commedia.'* He bequeathed his Dante library to the library of Univ. College, London.

Barlow, Jane (1857-1917), Irish authoress of sketches, novels, and tales of Irish life and character, was b. at Clontarf, Dublin, where her father, the Rev. W. B., was vice-provost of Trinity College. Of her numerous publications may be mentioned *Irish Idylls*, 1892; *Strangers at Lisconnel*, 1895; *Creel of Irish Stories*, 1897; *Irish Neighbours*, 1907; *Irish Ways*, 1909; *Mac's Adventures*, 1911; *Flaws*, 1911; *Doings and Dealings*, 1913.

Barlow, Joel (1754-1812), Amer. politician and writer, b. in Connecticut; pub. his bombastic poem *The Vision of Columbus*, 1787, expanded into *The Columbiad*, 1807. He went to France, 1788, and became a violent republican; *Advice to the Privileged Orders*, 1792; *Hasty Pudding*, burlesque poem, 1793. He was Amer. consul at Algiers, 1795-97, and ambas. to France, 1811. He d. near Cracow on a visit to Napoleon. See C. B. Todd, *Life*, 1866; and M. C. Tylor, *Three Men of Letters*, 1895.

Barlow, Peter (1776-1862), Eng. mathematician, b. at Norwich. From 1806 to 1848 he was prof. of mathematics at the Royal Military Academy, Woolwich. His publications on pure mathematics include *Elementary Investigation of the Theory of Numbers* (1811), and his mathematical tables (1814) are still used. His studies in magnetic attraction, on which he pub. a treatise (1820), led to improvements in the compass, and the pattern he introduced remained in use till superseded by the Thomson compass in 1876. He was a F.R.S., 1823, and Copley medallist, 1825.

Barlow, Thomas (1607-91), Eng. prelate, was fellow and tutor at Oxford, where he was noted as a keen controversialist and casuist. He was provost of Queen's College and Bodley's Librarian, 1642 and 1660. He was made archdeacon of Oxford, 1661, and bishop of Lincoln, 1675. He was the writer of innumerable pamphlets and books, and a violent opponent of Rom. Catholicism. Through all the political changes of his long life he managed to retain all his clerical benefices and preferments. His works include *Gunpowder Treason Popery, Exercitationes aliquot Metaphysicæ de Deo, and Concerning the Invocation of Saints*.

Barlow, Sir Thomas (1845-1945), Eng. physician, graduated in medicine in 1873 at London Univ., after being educated at Owen's College, Manchester, and graduating in arts at London in 1867. Became Fellow of the Royal College of Physicians in 1880; president, 1910-15. By 1893 he had reached the foremost rank of medical consultants. Became Holme Prof. of Clinical Medicine at Univ. College;

Fellow of the Royal Society; and president of the International Medical Congress (1913). He was physician to the households of Queen Victoria and King Edward VII., 1901-10, and physician extraordinary to King George V. He was also fellow of the Royal Society of Physicians, Budapest; physician at the London Fever Hospital, and consulting physician to Univ. College Hospital, and Hospital for Sick Children, Great Ormond Street, London. His outstanding contribution to medical science was that which he made on infantile scurvy and its relation to rickets. This made his name known throughout the world—the condition, previously and improperly called scurvy-rickets, now being known as Barlow's disease. The benefits which this contribution has conferred on children throughout the world are incalculable.

Barlow, Thomas Oldham (1824-89), Eng. line engraver and mezzotinter, made R.A. 1881; he reproduced the works of his contemporaries, including Landseer, Turner, Millais.

Barlow, William Henry (1812-1902), Brit. engineer; he supported the use by engineers of the steel produced by the Bessemer process. The chief works on which he was engaged include the building of St. Pancras station, London, the Clifton suspension bridge, and the Tay bridge.

Barmecides, noble Persian family, whose sudden fall from greatness under the Abbasid caliphate is proverbial. Khalid ben Barmak was minister of Mansur, and his son Yahya tutor and later vizier to the great Harun, in whose reign the family reached their highest power and prosperity, his sons Fadl and Ja'afar enjoying high favour. In 803 the whole family, save one, were exterminated. The romantic but not improbable story is that Harun discovered that Ja'afar had betrayed the caliph's sister after a marriage which was to be purely formal. It is likely that Harun felt himself powerless in the hands of the family. The mock banquet or proverbial Barmecide feast is well known from the *Arabian Nights* 'Barber's Tale.'

Barmen, tn. of the Rhineland, Germany, on the Wupper and the Aix-la-Chapelle-Berlin main line. It is now administered jointly with Elberfeld under the name Wuppertal. It joins Elberfeld. It became one of the chief manufacturing tns. of modern Germany, a centre of the textile industry, especially ribbon weaving, of machinery, cutlery, plated goods, and buttons. Dyeing and bleaching, piano manufacturing, soap-making, and chemical works were also large industries. The tn. was partially destroyed by air attack on May 29, 1943, during the Second World War. Pop. 188,000.

Barmouth, seaside resort, Merionethshire, N. Wales, in Cardigan Bay, at the mouth of the Maw. Pop. 2500. Cader Idris lies across the Maw, and the vale of Llangollen and Dolgelly afford beautiful excursions.

Barn, see under FARM.

Barnabas, St., by descent a Levite of

the country of Cyprus, his first name being Joses, or Joseph. The name of B. (son of consolation) was given to him by the apostles as appropriate to his character and works of charity. Alexander, a monk of Cyprus, says that he was brought as a youth to Jerusalem to study under Gamaliel. He is first mentioned in Scripture in Acts iv. 34. He it was who first introduced St. Paul to the apostles. Later he induced him to leave Tarsus and come to Antioch. He is supposed to have been martyred in Cyprus, but many traditions take him to Milan, Rome, and Alexandria.

Barnabas, The Epistle of St. There is still extant an epistle ascribed to St. B. consisting of 2 parts, the first in Lat., the second in Gk. In the Gk. copy some parts are missing. The first is an exhortation, an argument to constancy in the belief and profession of the Christian doctrine. The second contains moral instructions. The N.T. is not quoted in it. Internal evidence shows that it was written at the time of the destruction of the temple. Origen and Clement of Alexandria believed it to be authentic, and Lardner was also of that opinion, but it is generally now believed to be pseudonymous, and to be written by a Christian writer somewhere about the year 120. See dissertation by W. Cunningham, 1877.



BARNACLE

Barnabites, religious order, founded about the year 1530 under the name of Regular Clerks of the Congregation of St. Paul; they are so called because they first met in 1538 in the cloister of St. Barnabas at Milan. Their prin. object was the education of the young. They were forbidden to accept preferment in the Church save at the express command of the pope. The order spread to France, Germany, Austria, and Spain. They were suppressed during the time of the Fr. Revolution, but returned in 1850. In 1880 they were expelled from France, but continued in the other countries mentioned.

Barnaby, Sir Nathaniel (1829-1915), Brit. naval architect, b. at Chatham of a

family of shipwrights. In 1854 he became an admiralty overseer, and from 1870 to 1885 he was chief naval architect in the offices of the controllers of the Navy. He pub. sev. works on shipbuilding.

Barnacle, Bernicle (*Balanus*), genus of marine crustacean of the order Cirripedia and family Balanidae. The testa is in 6 pieces, either conical or cylindrical. (See illustration, p. 91.)

Barnacle (bird), see BERNICLE GOOSE.

Barnard, Lady Anne (1750-1825), Scottish authoress, the daughter of the fifth earl of Balcarres, James Lindsay. Her beautiful ballad *Auld Robin Gray* was written, 1772, set to music by the Rev. W. Leves, and pub. in 1783. She only acknowledged the authorship in 1823 to Scott. See her letters with a memoir by W. H. Wilkins in *South Africa a Century Ago*, 1925; also D. Fairbridge, *Lady Anne Barnard at the Cape of Good Hope*, 1924.

Barnard, Edward Emerson (1857-1923), Amer. astronomer, educated at Vanderbilt Univ. and, in astronomy, at Lick Observatory. Prof. of astronomy of Yerkes Observatory at Chicago Univ. from 1895 to 1923. Made numerous observations of comets and compiled a collection of celestial photographs.

Barnard, Frederick (1846-96), Eng. artist; studied at Heatherley's Art School and in Paris. First work, set of charcoal drawings, 'The People of Paris.' Contributed to *Punch*, 1863-65; cartoonist to *Fun* for 2 years. His best-known work is his illustration of the household ed. of Dickens, 1871-79. 'Character Sketches' from Dickens and Thackeray; illustrations of *Pilgrim's Progress*, 1880. Also painter in oils.

Barnard, Frederick Augustus Porter (1809-89), Amer. scientist and educator, b. at Sheffield, Massachusetts; graduated at Yale, 1828. Teacher to the deaf and dumb at Hartford, Connecticut, and later (1832-38) at the New York Institute for the instruction of the Deaf and Dumb. At the outbreak of the Civil war he retired to Washington, and in 1864 was tenth president of Columbia Univ. Among his works are *Letters on Collegiate Government*, 1855; *Recent Progress in Science*, 1869.

Barnard, George Grey (1863-1938), Amer. sculptor, educated at the Art Institute of Chicago, and the École Nationale des Beaux Arts. He exhibited in the Salon, 1894, and, 1900, was awarded the gold medal at the Paris exposition. He was prof. of sculpture at the Art Students' League, New York, 1900-4. His works include: 'The Boy,' 1885; 'Cain,' 1886; 'A Monument to Democracy,' 1920, which comprises 400 figures in plaster; 'Adam and Eve,' 1923, in marble; 'Let there be Light,' 1925, in bronze. His bronze statue of Lincoln, unveiled at Cincinnati, 1917, raised much controversy.

Barnard, Henry (1811-1900), Amer. reformer of education, b. Hartford, Connecticut, educated at Yale; was a member of the Connecticut legislature and reorganised the state schools, 1837-42. In various offices he reformed education in Rhode Is., Wisconsin, and Maryland, and

was first commissioner of education to U.S.A., 1867-70. His publications are numerous, and he was founder and editor of the *American Journal of Education*, 1855-81.

Barnard, Mrs. Charlotte Alington, see CLARIBEL.

Barnard, Sir John (1685-1764), Eng. merchant, b. at Reading, brought up as a Quaker, but conformed to the Church of England when 19 years of age. He entered the counting-house of his father, a wine merchant in London, and was soon entrusted with the entire management. He was responsible for the withdrawal of the Bill which was to affect the interest of the wine merchant. Soon after he was elected M.P. for London, which he continued to represent for nearly 40 years, generally voting with the party opposed to the administration of Sir Robert Walpole. He was elected an alderman of London 1728, was knighted 1732, and was lord mayor of London 1737.

Barnard Castle, tn. of Durham, England, on R. Tees, 15 m. N.W. of Darlington. It contains the ruins of a thirteenth-century castle built by Barnard Balliol, grandfather of John Balliol, King of Scotland. B. C. School was founded in 1883. The Rokeby of Scott's poem of that name is 2½ m. distant. The chief manuf. is flax thread. Pop. 4000.

Barnard College, for women, was founded by President Frederick A. P. Barnard, of Columbia, in 1889, on the refusal of the trustees of Columbia College to admit women on equal terms with men. B. C. is affiliated with the Columbia Univ., and in 1910 it was agreed that the president of that univ. should, *ex officio*, be president, and a trustee of B. C. The students register in the univ. and read for degrees. In 1889 there were 36 students, which number had increased in 1928 to 991.

Barnardiston, Nathaniel Walter, Major-General (1858-1919), Brit. soldier. He was military attaché at Brussels in 1906, and in that year visited Gen. Ducarne, chief of the Belgian General Staff, to discuss the military measures that Great Britain would adopt in the event of a violation of Belgian neutrality by Germany. The conversations were in no sense a convention. Gen. Ducarne's marginal note to his précis of what took place made it clear that the sole object of the interlocutors was to enable each nation to make its military plans with full knowledge of each other's dispositions if Belgian neutrality were infringed. War did not in fact take place, but in 1912 a fresh menace arose and again conversations took place—this time between Lt.-Col. Bridges and Gen. Jungbluth—successors respectively of Col. (later Maj.-Gen.) B. and Gen. Ducarne—as to what Great Britain could do in a military sense in the event of an invasion of Belgium. The Ger. press endeavoured to make a case out of these conversations in 1914, when the records of them were found in the Belgian War Office.

Barnardo, Thomas John (1845-1905), Eng. philanthropist, b. in Ireland, and

came to study medicine at the London Hospital, where he became interested in the condition of destitute children. In 1867 he opened his first 'home of refuge' in Commercial Road, and in 1873 he founded a 'village home' of 52 cottages at Ilford, Essex, for training girls in home conditions. Large numbers of children, after education, have been successfully placed in Canada and other Brit. dominions. See J. W. Bready, *Dr. Barnardo: Physician, Pioneer, and Prophet*, 1930; A. E. Williams, *Barnardo of Stepney*, 1948.

Barnardo's (Dr.) Homes: National Incorporated Association, founded in 1866, with head offices in Stepney Causeway, E.1., having the charter 'No destitute child ever refused admission' and the motto 'For God and Country.' The objects of the homes were to rescue, train, and place out in suitable situations in life destitute, orphan, and forlorn children, irrespective of their age, sex, or creed; physical disability has been no bar to their admission, except in the case of the mentally defective and epileptic. Since its foundation, over 133,000 children had passed through its hands up to 1946. The average number in residence is about 8000.

The B. H. now have over 178 branches, consisting of separate cottages and households, as well as branches in Canada and Australia for immigrants; Receiving Houses, Isolation Houses, Service Girls' Home, Ever-Open Doors in the tns. of Belfast, Birmingham, Bradford, Bristol, Cardiff, Hull, Leeds, Liverpool, Newcastle, Plymouth, Portsmouth, Sheffield, and Southampton.

Some of the outstanding homes are the Girls' Village Home at Barkingside, Essex; the Watts Naval Training School, Norfolk; Boys' Garden City, Woodford Bridge, Essex; Dame Margaret's Home, Washington, Durham; Babies' Castle, Hawkhurst, Kent; homes for cripples and invalids at sev. spas; convalescent homes at Felixstowe and Hove; the Marie Hilton Crèche in Stepney Causeway.

Barnato, Barnett Isaacs (1852-97), Eng. financier, son of humble Jewish parents of Aldgate, educated under Moses Angel at Jews' Free School, Spitalfields; in 1873 went to S. Africa as conjurer and entertainer; later assumed the name of B., and traded as diamond dealer at Kimberley. In 1880 he estab. the London firm of B. Brothers; in 1881 floated the B. Diamond Mining Company, Kimberley. In 1888 amalgamated with De Beers Company, controlled by Cecil Rhodes. B. was a member of Kimberley divisional council from 1880; member for Kimberley in Cape Assembly, 1888 and 1894. He invested in mining and other property in the Rand (Transvaal), and was chief manipulator of the 'Kafir boom,' London, 1895, suffering heavy losses afterwards. B. drowned himself during a voyage from Cape Town. See H. Raymond's *Memoir*, 1897.

Barnaul, cap. of dist. of same name, Altai, R.S.F.S.R., at junction of Rs. Ob and Barnaul, 230 m. S.W. of Tomsk. It is the centre of a sugar-beet region with

sugar factories, flour-mills, and leather and textile industries. Pop. 148,000.

Barnave, Antoine Pierre Joseph Marie (1761-93), Fr. revolutionist, b. at Grenoble; became an advocate and early attracted attention in the tn. parlement. In 1789 he represented Grenoble in the States General, where for some time he had much influence as a leader of the popular party. He was one of the founders of the Jacobin Club, and successfully claimed the right of making peace or war for the National Assembly, in opposition to Mirabeau, who wished to leave it with the king. In 1791 he was one of the commissioners who brought Louis XVI. back from Varennes to Paris, and his sympathy seems to have been aroused, as after this he advocated more moderate and constitutional measures. In 1792 he was impeached on a charge of royalist sentiments, and guillotined in 1793. See *Life* by E. D. Bradby (2 vols.), 1913; also O. G. de Heldenstam, *The Letters of Marie Antoinette, Fersen, and Barnave*, Eng. translation, 1926; earlier *Lives* by Salvander (1883) and Janin (1860).

Barnburners, political faction in Amer. hist., so called about 1844 on account of their enthusiastic support of radical reforms, which was compared with the rigour of the Dutchman who burnt down his barn to destroy the rats. They grew dissatisfied with the scanty recognition they received in the Democratic national convention of 1848, and joined the Free Soilers in supporting the presidential candidature of Van Buren. In 1852 they compromised with their former opponents, the Hunkers, and were subsequently known as the Softs or Soft-shells.

Barnby, Sir Joseph (1838-96), Eng. musician and composer, b. at York; educated at Royal Academy of Music. In 1862 he became organist at St. Andrew's, Wells Street, London; in 1864 conductor of B.'s choir; conducted oratorio concerts at St. James's and Exeter halls; in 1872 succeeded Gounod as conductor of the Royal Albert Hall Choral Society; in 1875 became musical director at Eton College; and in 1892 principal of the Guildhall School of Music. He was knighted in 1892. He composed numerous hymn tunes, church services, anthems, vocal solos and trios, part-songs, and oratorial works, including the motet *King All Glorious*, the oratorio *Rebekah*, 1881, and *The Lord is King*, a setting of the 97th psalm.

Barnes, tn. of Surrey, England, situated on the r. b. of the R. Thames, 22 m. E. by N. of Richmond. Pop. 43,000.

Barnes, Albert (1798-1870), Amer. theologian, b. at Rome, in the state of New York. He was educated at Princeton theological seminary. After being in charge of a church in New Jersey, he became the minister of the first Presbyterian church at Philadelphia in 1830. He was tried for heresy, on account of the tone of some of his *Notes to the Epistle to the Romans*, but was acquitted. He was a gifted preacher, and latterly belonged to the new school of Presbyterians. He resigned, on account of failing eyesight, from

Philadelphia in 1867, and d. in that city on Dec. 24, 1870. He is best known for his notes to various books of the O.T. and N.T., which are admirably adapted for Sunday schools and Bible classes.

Barnes, Barnabe (1562-1619), Eng. poet, b. at Stonegrave, Yorkshire, son of a bishop of Durham. He was educated at Brasenose College, Oxford; went to France with the earl of Essex in 1591; became a friend of Gabriel Harvey, and late in life wrote a tragedy, *The Devil's Charter*, printed in 1607 and performed before James I. His works include *Parthenophil and Parthenope* (1593), a collection of sonnets, elegies, odes, madrigals; *A Divine Centurie of Spirituall Sonnets*, 1595; and *The Battle of Evesham*. He was clearly a very well-read man, for not only are there numerous classical allusions in his poems, but conventional It. conceits characterise the madrigals as well as imitations of 'Zodiac' imagery, so popular with contemporary Fr. amorous writers. Thus B. was to this extent thoroughly *à la mode*, but at the same time he was not without originality and is regarded as the legitimate precursor of Chapman, Donne, and the 'metaphysical' poets. He wants to storm the heights of Parnassus, and his impetuosity often involves him in incongruous imagery or other literary extravagances. Yet not seldom he reveals a senuous wealth of phrase, notably in his madrigals, and sometimes, though much more rarely, also a really happy consonance of idea and expression as in his best-known sonnet *Oh, sweet Content, where is thy mild abode?* and again he shows technical skill in the manipulation of both his unrhymed classical metres and his rhymed schemes. That his poems had considerable influence on Eng. writers generally is not to be doubted. The poems were ed. by A. B. Grosart in 2 parts, 1875.

Barnes, Ernest William, bishop of Birmingham since 1924; b. Apr. 1, 1874, eldest son of John Starkie B.; educated at King Edward School, Birmingham. At Trinity College, Cambridge, he had a distinguished mathematical career, being bracketed second wrangler, 1896. Ordained, 1902; canon of Westminster, 1918-24; master of the Temple, 1915-19; bishop of Birmingham, 1924. His reaffirmation (in face of growing Catholic disparagement) of the Darwinian evolutionary belief, and his prohibition in his diocese of the illegal practice of reservation of the sacrament (a practice tacitly admitting the doctrine of transubstantiation), brought him into conflict with Anglo-Catholics. On Oct. 16, 1927, when he was about to preach in St. Paul's, a London clergyman present called for his excommunication; and in 1930 he refused to defend himself in a civil court action by a recalcitrant presentee whom he had declined to admit. Publications: *Papers on Gamma Functions*, *Integral Functions*, *Linear Difference Equations*, contributions to the Transactions of the Royal Society, the Cambridge Philosophical Society, and the London Mathematical Society; also various sermons: *Should Such a Faith*

Offend?, 1927; *Scientific Theory and Religion* (Gifford Lectures), 1933; and *The Rise of Christianity*, 1947.

Barnes, George Nicoll (1859-1940), Eng. statesman. His political life was spent in labour and trade union politics. Was general secretary of the Amalgamated Society of Engineers, and chairman of the Parliamentary Labour party, which he represented in Lloyd George's War Cabinet. Entered Parliament in 1906 and sat for a Glasgow div. until 1922. Cabinet minister 1917-20 and member of Peace Conference, 1919. His greatest service was the draft proposals he prepared for the Commission on World Labour, which subsequently developed into the International Labour Office. He was created Companion of Honour in 1920.

Barnes, Harry Elmer (b. 1889), Amer. educationist, educated at Columbia Univ. and, for research work, at Harvard. He has held many fellowships and lecturerships in Clark Univ., Smith College, and Amherst College. Was historian to Panama Canal Commission, 1918; statistician to the War Dept. in 1918. In 1930, because of the greater freedom of expression it offered him, he resigned his college posts to join the editorial staff of the Scripps-Howard newspapers, and remained with them for 10 years. In 1937-38 he was also lecturer in education at the Teachers' College, Columbia Univ. Publications: *Sociology before Comte*, 1917; *History—its Rise and Development*, 1919; *Evolution of Penology in Pennsylvania*, 1922; *The New History and the Social Studies*, 1924; *Studies in American Imperialism* (7 vols.), 1928-36; *A History of Western Civilisation* (2 vols.), 1935; *An Economic History of the Western World*, 1937; *Social Thought from Lore to Science* (2 vols.) (with H. Becker), 1940; *The Four Great World Revolutions*, 1944.

Barnes, Joshua (1654-1712), Eng. scholar, b. in London. He was educated at Christ's Hospital, and afterwards went to Emmanuel College, Cambridge. He was elected regius prof. of Gk. at Cambridge in 1695; in 1700 he married Mrs. Mason of Hemingford, a widow lady with a good jointure, a large part of which he devoted to the publication of his Homer; in 1711 he wrote to Harley 3 letters, which are preserved in the Harleian collection (B. Mus. 7523), begging for preferment, but in vain. His widow erected a monument to his memory of Hemingford. His name is best known for his ed. of Homer, 1711, 2 vols. 4to, and of Euripides, 1694, folio. For his 'injudicious publications' and his quarrel with Bentley, see *Jebb's Bentley* in Eng. Men of Letters, 1881, pp. 35-6.

Barnes, Juliana, see **BERNERS**.

Barnes, Robert (1495-1540), Eng. reformer and martyr, educated at Cambridge. In 1526 he was condemned to abjure or be burnt for preaching a heterodox sermon. He was sent to Germany in 1535 to induce the Lutheran divines to approve of Henry VIII's divorce. He attacked Bishop Gardiner in a sermon at St. Paul's Cross, and in consequence of this was burnt.

Barnes, Thomas (1785-1841), Eng. journalist and editor of *The Times*. He was educated at Christ's Hospital and Pembroke College, Cambridge, taking his degree in 1808. He took up the profession of journalism in London, and was a member of the literary circle which included Leigh Hunt, Hazlitt, and Charles Lamb. He was at first an advanced Liberal, but his opinions had sufficiently changed to enable him to take over the editorship of *The Times* when Dr. Stoddart retired in 1817. He was responsible for the remarkable change in the outlook of the paper which took place between 1831 and 1835.

Barnes, William (1801-86), Eng. clergyman, philologist, and poet, *b.* at Rushay, Dorsetshire. In 1823 he went to teach in a school at Mere, Wiltshire; in 1835 became master of the grammar school at Dorchester; in 1847 was ordained and became curate of Whitcombe; in 1862 became rector of Winterbourne Came, where he spent the rest of his life. His Dorsetshire poems exhibit a deep love of nature, and a keen knowledge of his rustic neighbours. They are steeped in Dorset lore and written in the Dorset dialect. The 3 collections appeared under the names of *Poems of Rural Life in the Dorset Dialect*, with a *Dissertation and Glossary* (1844); *Homely Rhymes* (1859), and *Poems of Rural Life in the Dorset Dialect* (1879). His philological works include *Philological Grammar* (1854); *Se Gefyllta, an Anglo-Saxon Delectus* (1849); *Tiw; or, a View of Roots and Items of the English as a Teutonic Tongue* (1861); and *A Grammar and Glossary of the Dorset Dialect* (1864). Life by his daughter, Lucy Baxter ('Leader Scott'), 1887.

Barnet, urb. dist. and mrkt. tn. of Hertfordshire, England, 11 m. N. of London by rail. It is notable for its horse fair which is held in Sept. An obelisk near the tn. marks the site of the battle of 1471, in which the Lancastrians, under Warwick, who was killed in the fight, were defeated by Edward of York. Chipping B. is within the urb. dist., and New and East B. are suburbs. Pop. (1931) 16,000. Friern B., Middlesex—so called because the manor belonged to the friary of St. John of Jerusalem—about 3 m. S., is a separate urb. dist. Pop. 18,000.

Barnett, Henrietta (1851-1936), Eng. social worker, wife of Canon S. A. Barnett (*q.v.*). She started the Children's Country Holiday movement in 1878 and, soon afterwards, the London Pupil Teachers' Association, of which she was president from 1891 to 1907. Co-operated in the formation of the Whitechapel Art Gallery, which was opened in 1901, and collaborated with her husband in much of his work. Created D.B.E. in 1924.

Barnett, John (1802-90), Eng. composer, *b.* at Bedford; composed songs, part-songs, instrumental music, and operas. His works include: *The Omnipresence of the Deity*, 1830; *Lyrical Illustrations of the Modern Poets*, 1834; *The Mountain Sylph*, 1834; *Fair Rosamund*, 1837.

Barnett, John Francis (1837-1916), Eng.

pianist and composer, *b.* in London Oct. 16, studied at Royal Academy of Music, London, and Leipzig Conservatorium; became prof. at the Guildhall School of Music and the Royal College of Music. In 1861 he played at a Gewandhaus concert at Leipzig, and his first noteworthy composition, a symphony in A minor, was performed in 1864 by the Musical Society of London. His works, mainly cantatas, include: *The Ancient Mariner*, 1867; *Paradise and the Peri*, 1870; *The Lay of the Last Minstrel*, 1873; *The Raising of Lazarus*, 1876; *The Building of the Ship*, 1880; *The Wishing Bell*, 1893; *Liebeslied im allen Styl*, 1895. *D.* in London Nov. 24.

Barnett, Samuel Augustus (1844-1913), Eng. clergyman and philanthropist, *b.* at Bristol, becoming canon there, 1893. One of the founders and warden of Toynbee Hall (*q.v.*), Whitechapel, 1884-1906, becoming president 1906. Canon of Westminster, 1906; president of the Sunday Society, curate, St. Mary, Bryanston Square, 1867-72; vicar, St. Jude's, Whitechapel, 1872-94. Chairman, Whitechapel Board of Guardians, 1894, also Children's Country Holiday Fund. Select preacher, Oxford, 1895; Cambridge, 1899 and 1905. *B.* pub. *Practicable Socialism* (with his wife), 1888; *The Service of God*, 1897; *Religion and Progress*, 1907; *Towards Social Reform* (with his wife), 1909; *Religion and Politics*, 1911. See H. O. Barnett, *Canon Barnett: his Life, Work, and Friends*, 1918.

Barneveld, tn. in Gelderland, 17 m. N.W. of Arnhem, Netherlands; pop. 12,000.

Barneveldt, Jan van Olden (1547-1619), Dutch statesman, grand pensionary of Holland. He was *b.* at Amersfoort in Utrecht. He studied law and divinity at Heidelberg and The Hague, and at the latter settled down as an advocate in 1569. He was appointed one of the advocates of the court, and was chosen counsellor and pensionary of Rotterdam in 1576. In his capacity as advocate-general and grand pensionary, *B.* headed a deputation to England to make a formal offer of the revolted provs. of the Netherlands to Queen Elizabeth. *B.* now became leader of the republican party, opposed the war policy of Prince Maurice, and brought about a truce with Spain in 1609, which lasted 12 years. He took the side of the Arminians against the Calvinists, who were supported by Maurice. In 1616 *B.*'s influence was increased by his having obtained from James I. the restoration of the cautionary tns., which had been given up to Elizabeth as securities for the money which she had lent the states by the treaty of 1585. In 1618 a national synod, known as the Synod of Dort, was summoned to settle the great struggle between the Arminians and the Gomartites. *B.* and his friends Grotius and Hoogerbeets were arrested, and the trial of the prisoners commenced Nov. 19, 1618. *B.* was found guilty, and was beheaded in the courtyard of The Hague in May 14, 1619. See Motley's *Life of Barneveldt*, 2 vols., 1874.

Barney, Joshua (1759-1818), Amer. naval

officer, *b.* at Baltimore, Maryland, U.S.A. He entered the naval service, and at the age of 17 obtained the commission of lieutenant in the Amer. Navy. When in active service on board the *Saratoga* he was placed as prize-master of a captured Brit. ship, which in an almost sinking condition was recaptured by an Eng. 74-gun ship, and *B.* sent to England. In 1782 he escaped from prison and returned to America, where, as commander of a small ship of war, he captured a brig belonging to the Brit. Navy off Delaware. For this he received the thanks of the legislature of Pennsylvania and was promoted to the rank of commodore. He was afterwards sent with dispatches to Dr. Franklin in Paris and returned with the news of the signing of preliminary articles of peace between England and America, 1784. When war broke out in 1812, he joined in a land attack at Bladensburg, and received a wound in the leg from which he never recovered. He *d.* at Pittsburg.

Barnfield, Richard (1574-1627), Eng. poet, *b.* at Norbury, Shropshire, and spent most of his life at Stone, Staffordshire. He wrote sonnets and pastorals. His works include: *The Affectionate Shepherd*, 1594, a pastoral based on Virgil's second eclogue; *Cynthia, with certaine Sonnets and the Legend of Cassandra*, 1595; *The Encomion of Lady Pecunia*, etc., 1598, which contains 2 of his best songs, *As it fell upon a Day and If Music and Sweet Poetry agree*. These were reprinted in *The Passionate Pilgrim*, 1599, and long attributed to Shakespeare.

Barnoldswick, urb. dist. of W. Riding, Yorkshire, England, 8 m. from Skipton, on the Liverpool-Leeds Canal. Has cotton weaving industries. Pop. 12,000.

Barnsley, tn. of W. Riding, Yorkshirc, England, on R. Dearne, 12 m. N. of Sheffield. It is in a rich coal-mining dist., and has manufs. of textiles, glass, iron, needles, paper, wire, and boots and shoes, besides bleaching and dye works. The tn. dates from pre-Norman times, but contains few old buildings. It was incorporated in 1869, and has a fine public hall, a park of 20 ac., libraries, baths, etc. The B. Canal connects it with Leeds and Wakefield. The bor. was extended in 1921. It returns a member to Parliament. Pop. (estimated 1937), 72,500.

Barnstable: 1. Seaport of Devon, England, on R. Taw, 6 m. from the mouth, 34 m. N.W. of Exeter; pop. 15,000. It contains a fourteenth-century par. church, an old grammar school, endowed in 1649, and occupying part of a ruined monastery, at which the poet John Gay was educated, and some quaint old houses in Bontport Street. The riv. is crossed by a twelfth-century bridge of 16 arches. The silting up of the tidal harbour has robbed the tn. of its commercial importance, but there are manufs. of lace, gloves, and pottery (Barum ware). It was formerly a centre of broadcloth weaving. 2. Seaport and post tn., cap. of B. co., Massachusetts, U.S.A., is situated 74 m. S.E. from Boston, on the S. side of B. Bay, which opens into Cape Cod Bay. There is a bar across the mouth of the bay, with 6 or 7 ft. of water.

From 50 to 60 fishing and coasting vessels belong to the port. Pop. 8300.

Barnum, Phineas Taylor (1810-91), Amer. showman, *b.* at Bethel, Connecticut; entered a country store in 1823; went into the lottery business in 1828; in 1829 married and went to Danbury, where he ed. *The Herald of Freedom*. In 1834 he removed to New York and made a considerable profit by exhibiting Joyce Heth, supposed to be the nurse of George Washington. In 1841 he bought the Amer. Museum in New York, and made it famous by his collection of real and pretended wonders. In 1847 he acted as manager for Jenny Lind, and in 1871 estab. his 'Greatest Show on Earth.' He pub. an *Autobiography*, 1854, enlarged in 1888; *Humbugs of the World*, 1865; *Struggles and Triumphs*, 1869; and *Money-getting*, 1883. See his *Life* by Benton, 1902, and also M. R. Werner, *P. T. Barnum*, 1923, and H. W. Root, *The Unknown Barnum*, 1927.

Baroach, Broach, or Bharuch, anct. city and modern dist. in the N. div. of the Bombay Presidency, India. The city is situated on the r. b. of the Nerbudda, 203 m. N. of Bombay. It has cotton and flour mills. The dist. has an area of 1467 sq. m., and cultivates crops of cotton, millet, wheat, and pulse. Pop. of the dist. 300,000, of the tn. 48,000.

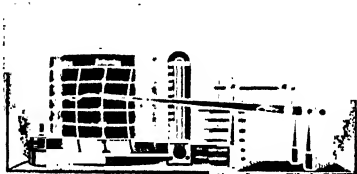
Baroccia, or Baroccio, Federigo (1528-1612), It. painter, *b.* and *d.* at Urbino, son of eminent sculptor. Studied under Battista Veneziano, and was patronised by Cardinal della Rovere at Rome, whose palace he ornamented with frescoes. After 4 years he returned to Urbino, and painted a picture of St. Margaret for the Confraternity of the Holy Sacrament. At the invitation of Pope Pius IV. he assisted in the embellishments of the Belvedere palace, on which Zuccherro was also engaged. Here he executed the Annunciation in fresco on one of the ceilings, and a picture of the 'Holy Virgin with the Infant Saviour, with Saints.' His other works include an altar-piece of the 'Deposition or Descent from the Cross' in the cathedral of S. Lorenzo at Perugia; a picture of the 'Last Supper for the church of Minerva; and the 'Visitation of the Virgin Mary to Elizabeth.'

Baroche, Pierre Jules (1802-70), Fr. advocate and minister of state, *b.* in Paris; became an advocate in 1823; in 1847 entered the Chamber of Deputies as member for Rochefort; in 1848 was elected to the Constituent Assembly; in 1850 became minister of the Interior, and in 1851 minister of foreign affairs. Having become a partisan of Louis Napoleon, he was appointed president of the Council of State after the *coup d'état* of 1851, and in 1863 he became minister of justice. At the fall of the second empire in 1870 he fled to Jersey, where he *d.*

Baroda: 1. Native state in Gujarat div. of Bombay, India. The ter. is scattered, but the total area is 8200 sq. m. It is ruled by a feudatory Mahratta chief, known as the gawkwar. The dist. is very fertile. Pop. (1941) 2,855,000. 2. Cap. city of above state, on R. Visvamitri.

248 m. N. of Bombay, with which it is connected by railway. It has fine water-works, constructed in 1892, and contains B. College, the palace of the gaekwar, known as Lakshmi Villas, the Naulakhi Wells, the state library, the Dufferin Hospital, an Anglo-vernacular school, etc. It has a large trade in grain, flax, cotton, and tobacco. See P. W. Sergeant, *The Ruler of Baroda* (London), 1928. Pop. 100,000.

Barograph, instrument by which the variations of atmospheric pressure are permanently recorded. An efficient B. for use in connection with a mercurial barometer is provided by placing a moving strip of photographic paper behind the upper part of the mercury column. The light is concentrated by a lens upon the top of the column, which partly obscures the paper slowly passing behind a narrow slit. The width of the paper unaffected by light thus gives a means of indicating the movements of the mercury column.



BAROGRAPH

The B. commonly used with barometers of the aneroid pattern consists of a system of levers by which the movements of the collapsible chamber are communicated to a pointer, which acts as a pen and makes records on a chart wound round a cylinder revolving by clockwork once a day or once a week.

Barometer, instrument for measuring the weight or pressure of the atmosphere. The action of a suction pump in raising water was explained prior to 1643 by the principle that 'nature abhors a vacuum.' Galileo had observed that water could not be raised by the ordinary pump more than about 32 ft., and he recommended the study of the matter to his pupil Torricelli, who made the following experiment in 1643: A glass tube, about 3 ft. long, closed at one end, is completely filled with mercury and inverted, the open end placed in a trough of mercury, and the thumb removed. The mercury at once falls in the tube to within 30 in. of the level of the mercury in the bath, the space above forming what is known as the Torricellian vacuum. As mercury is about 13½ times as heavy as water, Torricelli concluded that the force required to support the column of mercury would support a column of water of the same diameter and about 34 ft. high, and that the action of the pump and the sustaining of the column of mercury both depended on the pressure of the atmosphere acting

on one side of the liquid column. The validity of the conclusion was proved by Pascal, who caused Torricelli's experiment to be performed on the summit of the Puy de Dôme. The column of mercury was found to be 3 in. lower, showing that the pressure supporting the liquid diminishes with ascent to higher levels of the atmosphere. Pascal also performed experiments with water, oil, and wine, and found that columns were supported the heights of which were inversely proportional to the specific gravities of the liquids; and that in each case a weight of about 15 lb. of liquid was supported upon 1 sq. in. of surface. Any variations in the height of the Torricellian column are accounted for by variations in the pressure of the atmosphere, so that such an instrument, when suitably fitted up for permanent use, forms an efficient B.

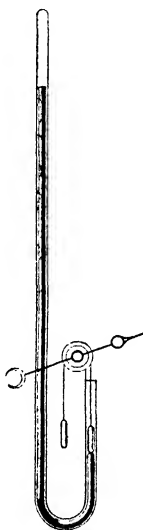
Cistern Bs. The simplest form of cistern B. consists of a glass tube about 33 in. long, containing mercury and dipping into a cistern also containing mercury. It is fastened to a wooden stand, on the upper part of which is a brass scale indicating the height above the average level in the cistern. The instrument is liable to the 'error of capacity'; that is, any diminution in the amount of mercury in the tube raises the level in the cistern, and vice versa, so that the scale does not always indicate the correct height of the column. In *marine Bs.* this error is avoided by graduating the scale, not in true inches, but in spaces which have been arrived at empirically as representing the correct height. In *Fortin's B.*, the bottom of the cistern is made of leather, and can be pushed up by means of a screw until the surface of the mercury in the cistern touches the end of a fixed ivory point, which is the starting-point of the scale. The glass tube is encased in a brass cylinder with 2 slits about 6 in. long on opposite sides to enable the top of the mercury column to be plainly seen. A brass collar with a vernier scale slides over the scale on the brass cylinder; the collar is provided with 2 slits slightly wider than the slits in the cylinder, and the scale is adjusted by bringing the upper edge of the slits down to the topmost point of the convex curve at the top of the mercury column. It is necessary that the mercury column should be exactly vertical for the scale to give a correct reading; this is effected by a Cardan's suspension, in which the tube is fixed above its centre of gravity in a collar which swings on a horizontal axle pivoted in a surrounding ring, which in its turn swings on an axle at right angles to the first and pivoted in a fixed supporting ring; the tube can thus take up a plumb-line position whatever may be the movements of the support. Another error to which cistern Bs. are liable is due to *capillarity*, or the reluctance of the surface of the mercury—a liquid which does not 'wet' the glass—to rise to the height determined by pressure. This error may be diminished by using tubes of more than eight-tenths of an in. in diameter.

Siphon Bs. The simplest form of

siphon B. consists of a bent glass tube; one arm is about 36 in. long and is sealed, while the other arm is about 8 in. long and is open. Mercury is poured in and worked to the closed end until the long arm and part of the short arm are full. When placed with the closed end uppermost, the mercury falls until the level in the closed arm is about 30 in. above the level in the open arm. To make an observation,



FORTIN
BAROMETER



PRINCIPLE
OF WHEEL
BAROMETER

therefore, the height of the mercury in both arms must be taken, the difference giving the true barometric column. Owing to the subtraction, the error of capillarity disappears, and there is no error of capacity. The inconvenient nature of the observations, however, and the possibility of impurities affecting the mercury at the open end, constitute such disadvantages that the instrument is not in favour for exact work. In the Hooke or wheel B., the observations are rendered easier by placing a glass float in contact with the mercury, having attached to it a thread which passes over a pulley. The thread is pressed against the pulley by a

small weight which almost balances the float. The movement of the pulley is communicated to a pointer which sweeps around a graduated dial, which also bears such inscriptions as 'stormy,' 'set fair,' 'very dry,' etc., giving information of doubtful value. In Gay-Lussac's form of the siphon B. the 2 arms are joined by a capillary tube. When inverted for carrying, the mercury is nearly all contained in the longer arm, and the capillary tube prevents the entrance of air. In Bunten's improved form the entrance of a small quantity of air is made of no account by the provision of a funnel or 'air-trap' between the cistern and the top of the mercury column. The air-bubbles are entrapped in the funnel, and therefore do not find their way to the Torricellian vacuum.

Corrections. In mercurial Bs. for accurate work the scale is engraved on brass, the co-efficient expansion of which is accurately known. The increase in length of the scale due to a rise in temp. thus tends to make the reading lower than it should be. On the other hand, the mercury also expands on a rise in temp., its density therefore diminishes, and the height of the column supported by the atmospheric pressure is greater than at the standard temp., 0° C. or 32° F. The barometrical readings have therefore to be corrected for temp., and with many instruments tables are provided, indicating the corrections necessary to reduce the readings to 0° C. or 32° F. To apply the corrections for errors of capillarity it is necessary to know the internal diameter of the tube and the height of the *meniscus*, or curved surface. Reference to a table with respect to these 2 quantities will indicate the amount required to be added to the observed reading.

Variations in barometrical height are of 2 kinds, periodic and accidental. The periodic variations are those which occur with a fair amount of regularity at certain hrs. of the day. Accidental variations are those which depend on a variety of conditions: the direction of the winds, geographical position, and the amount of water vapour present in the air. In temperate lat. the accidental variations are by far the most important, and are so considerable as to render observation of any periodic variations very difficult. At the tropics, accidental variations are practically non-existent, and the daily fluctuations take place with great regularity. The cause of barometrical variations is the difference in the sp. gr. of the air occasioned by differences in temp. Thus the B. tends to fall from noon until about 4 o'clock, as the air becomes lighter from the heating effect of the sun; it then rises until it reaches its maximum at about 10 o'clock in the evening. In W. Europe, the warmest and lightest winds are those blowing from the tropics over the Atlantic Ocean; these usually affect the higher reaches of the atmosphere first, diminishing the total pressure, so that a fall in the B. usually indicates the advent of a moist S.W. wind, and therefore the possibility of rain. The B.

is in this way useful as a guide to the probable weather; in other lats., however, it by no means follows that a falling B. is an indication of rain or stormy weather.

Uses of the B. As indicated above, the B. may be used to foretell weather conditions if the peculiar circumstances of the region are known. It is also used as a hypsometer, or instrument to measure height above sea level, as the density of the air for a constant temp. is proportional to the pressure of the superincumbent atmosphere. The B. is also used in physical experiment and in industry to indicate the pressure of gases in terms of atmospheric pressure. Standard atmospheric pressure is understood, in physics, to mean the pressure which sustains at the sea level, and at a temp. of 0° C., a vertical column of mercury 760 mm. high. In engineering, the pressure of one atmosphere means a pressure equivalent to 15 pounds on each sq. in. of surface. It has been suggested that the standard pressure should be represented in terms of force as one million dynes per sq. cm., this being equivalent to a barometric height of 29.513 in. or about 750 mm. at Greenwich, the acceleration due to gravity at that place being taken as 981.17 cm. per sec. The pressure of 1,000,000 dynes per sq. cm. is known as a bar, though in the U.S.A. this name is given to a pressure of 1 dyne per sq. cm. The bar is used chiefly in meteorological work. See also ANEROID; METEOROLOGY. See F. C. Marvin, *Barometers and the Measurements of Atmospheric Pressures*, 1912; Sir R. T. Glazebrook (ed.), *A Dictionary of Applied Physics*, 1922-23; G. W. C. Kaye, *High Vacua*, 1927; London Meteorological Office, *The Observer's Handbook*. See also bibliography to article METEOROLOGY.

Barometz (Russian *barametz*, dimin. of *baran*, ram) prostrate hairy stem of a fern, *Cibotium barometz*, about which an extraordinary superstition arose. It was called Scythian lamb, and its shaggy appearance and crouching attitude gave rise to the fable that it was partly animal, partly vegetable, and devoured all plants in its vicinity.

Baron, word of uncertain origin, introduced at the Norman Conquest to denote the 'man,' or vassal, of a lord. Originally the term was of wide application, but in England the process of limitation began early. The word was first restricted to those who held land directly from the king by military tenure, and by the thirteenth century the div. of these into greater and lesser Bs. had become common. Magna Charta in 1215 provided that the lesser Bs. should be summoned to the Great Council only through the sheriffs, while to the greater Bs., i.e. nobility from earls downward, a special summons should be sent by the king. This summons gradually became the badge of peerage, restricting the privilege to the greater Bs. alone. Till this point the position of a B. was that of a holder of the king's land, but the personal note became dominant in 1387, when the creation of Bs. by letters patent was in-

augurated. In that year Richard II. created John de Beauchamp B. of Kidderminster. The practice, however, did not become general until the reign of Henry VI. The creation of B. by writ, formerly an ordinary proceeding, was almost entirely discontinued. The B.'s coronet (granted by Charles II.) is of ermine with 6 large pearls set round the chaplet. Bs. of the exchequer was the title long given to the 6 judges in the court of exchequer, and the name Bs. of the Cinque Ports shows the retention of the freer use of the word. It designated the chief officials and parl. representatives of the 5 great S. ports in the House of Commons. On the Continent the title was given a wider application than in Great Britain. In France only those bearing a name of historic note receive status from the title of B., and in Germany the title, which is handed down to all the children, became quite dissociated from all idea of possession of land.

Baron and Femme, or *Feme*, Norman-Fr. words used to denote husband and wife in their mutual relationship. In heraldry the words denote the bearing of the arms of husband and wife per pale, i.e. side by side on the same escutcheon, the husband's always being on the dexter side.

Baron, Bernhard (1850-1929), Amer. tobacco merchant and philanthropist; b. at Brest-Litovsk, Russia, of poor Jewish parents. His childhood was spent among the Don Cossacks at Rostov. His father, whose experience had imbued him with a horror of conscript life, took him to America to avoid his conscription. He began work as a boy in a New York tobacco factory, where he sometimes slept in a shed. He invented a cigarette-making machine, unmarketable in America, which he brought to England and sold for £160,000, 30 years after leaving Russia. In 1903 he bought the small tobacco business of Mmc. Carreras. For 5 years it made no profit; afterwards it became a limited company with B. as chairman. He d. worth nearly 5 million sterling, at Brighton, Aug. 1, 1929. His benefactions include £25,000 in 1927 to endow a pathological institute to bear his name; a gift of £50,000 for rebuilding of St. George's Jewish Settlement in the E. end of London; in 1928 a trust of £500,000 to be used for hospitals and homes for orphans and crippled children during the succeeding 20 years; in 1934 a gift of £10,000 was made from the B. B. Charitable Trust Fund to the Brit. Empire Cancer campaign, and in 1936 a gift from the same trust for new research laboratories for the Royal College of Surgeons.

Baronet, title created by James I. in 1611, to obtain funds for the defence of Ulster. Each B. was required to supply the funds for keeping 30 soldiers in Ireland (at the rate of 8d. per day) for 3 years. It was promised that the number of Bs. created should not exceed 200, and it was also stipulated that the honour could only be conferred on a man who had a clear revenue of £1000 from lands, and whose family had borne arms at least as far back

as his grandfather. It conferred the prefix 'Sir' on the B., and 'Lady,' or 'Dame,' on his wife, and gave him precedence over all other knights, but not over the younger sons of barons. In 1625 Charles I. instituted Bs. of Nova Scotia in Scotland. This was a scheme for the colonisation of that colony, and grants of land were made to the new Bs., who paid 3000 marks for the honour. The number, not to exceed 150, was never completed. In 1629 they received the right of wearing a badge, suspended by an orange-tawny ribbon, with a saltire azure, thereon an inescutcheon of the arms of Scotland, surmounted by an imperial crown, round the whole a motto, *Fax mentis honestæ gloria*. In 1707 they were created Bs. of the U.K.

Baronius, Cæsar (1533-1607), It. eccles. historian, b. at Sora in Naples, the son of Camillo Baroni and Porzia Feboria. He studied divinity and law at Naples, and afterwards at Rome, where he was the pupil of St. Philip Neri, whom he succeeded as superior of the congregation of the oratory, 1593. In 1596 he was made cardinal, and in 1597 librarian of the Vatican; but failed to become pope in 1605 owing to the opposition of the Spaniards. His most celebrated work, *Annales Ecclesiastici a Christo Nato ad Annum 1198* (12 vols. 1588-1607), was written in reply to the Protestant work entitled *Magdeburg Centuries*, and its object was to show that the doctrine of the Church of Rome was identical with that of the early Christian Church. Another work of B. worthy of note is *Martyrologium Romanum*, 1586. According to Mazzuchelli (*Scrittori d'Italia*, fol. Brescia, ii. pt. i. p. 387), there are 19 works of B. in print and MS.

Baron of Beef, large piece of beef consisting of both sides of the back, a double sirloin, sometimes weighing 100 lb. This huge joint was only served at great public entertainments, notably at civic feast at Guildhall, London. The origin of the name is unknown, but legend ascribes it, as well as Sir Loin, to a jest of Charles II.

Baronscourt, Irish seat of the duke of Abercorn in Co. Tyrone, N. Ireland, 3 m. S.W. of Newtown Stewart. Also the name of a London dist. between Earls Court and Hammersmith, on the Dist. Railway.

Barons' War, *The*, see under MONTFORT, SIMON DE.

Baroque (from Portuguese, *barroco*, rough pearl), term originally restricted to the jeweller's trade, but now chiefly used in architecture. The term signifies the extravagant, capricious, incongruous, but sometimes picturesque ornament of the late Renaissance. B. architecture, the decorative style of the eighteenth century, may be compared to the Louis Quinze style, but is differentiated by its clumsy forms, especially exemplified in eccles. buildings and in a contorted ornamentation of meaningless scrolls and shell-work. In this latter connection the word baroque is frequently used as a synonym for rococo, but strictly the latter term is applied to ornamentation of

the same period which, though inorganic and exuberant, yet has elements of beauty and artistic qualities; while the term baroque may imply repellent qualities. Many examples of B. architecture are supplied by the Jesuits—whence the style has sometimes been called the Jesuit style. See Sacheverell Sitwell, *Southern Baroque Art*, 1924.

Baroscope (Gk. *βάρος*, pressure, and *σκοπέω* to look), type of barometer which indicates only variations of the atmospheric pressure, but does not, as the ordinary barometer does, supply any quantitative data.

Barosma, **Buohu**, or **Bucku**, name of a genus of Rutaceæ found in S. Africa as an evergreen shrub. *B. crenata* is one of the Bucku plants of the Cape. The leaves are employed in medicine as a diuretic.

Barotac or **Barotag Nuevo**, tn. of Panay Is., Philippine Is., situated in a fertile dist. of Iloilo. Pop. 20,000.

Barotseland, former kingdom of Central Africa, in the Upper Zambesi. It now forms the dist. of N.W. Rhodesia, and is a native reserve, Europeans, except for missionaries, traders, and officials who have been approved by the paramount chief, not being permitted to settle. Lewanika, who d. in 1916, put B. under Brit. protection. He was succeeded as paramount chief by his son, Yeta III. The dist. is well watered and fertile, and supports a large pop., the Barotse being the most capable and adaptable of the N. Rhodesian natives. Many of them are Christians. The migration to the N. and S. Rhodesian and S. African mines of so many of the younger men involves their detribalisation with consequent hardship to their families, through the destruction of their social organisation. Lialui is the cap. and the residence of the chief, but Mongu, 7 m. away, is the chief station and Brit. residency. Other stations are Nalolo and Shesheke. There is a postal service from Lialui to Bulawayo. Consult D. W. Stirke, *Barotseland*, 1922.

Barousse, valley in the Hautes-Pyrénées, France.

Barozzi, or **Barocchi**, see VIGNOLA.

Barpeta, tn., Kāmrup dist., Assam, India. Pop. (chiefly Hindu) 10,000.

Barque, or **Bark**, originally any small ship, but now more particularly a three-, four-, or five-masted sailing vessel, with fore and main masts square-rigged, but mizzen-mast rigged fore and aft, i.e. in a line with the run of the ship. Formerly they were small vessels only, but later four-masted steel Bs. range between 2300-3000 tons.

Barquisimeto, cap. city of state of Lara, Venezuela, on B. R., 165 m. S.W. of Caracas. It is a bishop's see and contains a college, cathedral, gov. palace, etc. It stands in a fertile agric. and stock-raising dist., and does a large trade through its port, Tusacas. Pop. 36,500.

Barr, tn. in Bas-Rhin, France. It is 18 m. S.W. from Strasburg, and is noted for its mineral baths. Pop. 4000.

Barr, or **Barra**, formerly a petty kingdom of W. Africa, at the mouth of the

Gambia. This and some neighbouring kingdoms on the Gambia were founded by Amari-Sonko, a Mandingo warrior, apparently for the purpose of facilitating the operations of the traffic in slaves.

Barr, Amelia Edith (1831-1919), Anglo-Amer. authoress, *b.* at Ulverstone, in Lancashire, England; educated in Scotland, and after her marriage with Robert Barr went to Texas. Removed to New York in 1869 after the death of her husband. Among her works are: *The House on Cherry Street*, 1909; *Belle of the Bowling Green*, 1908; *Remember the Alamo*; *A Border Shepherdess*, 1887. See autobiography *All the Days of My Life*, 1913.

Barr, Archibald (1855-1931), Scottish inventor, *b.* in Renfrewshire. Educated at Paisley and Glasgow Univ., where he was regius prof. of civil engineering and mechanics, 1889-1913. Invented with Stroud naval range-finders, adopted by Brit. Admiralty and foreign govts.; also various range-finders for fortress and field service, electrical fire control instruments for use between fire control positions and gun stations of war-vessels (adopted by Brit. Admiralty), and a pump for producing high vacua. Also inventor of height-finders for the anti-aircraft services, torsion dynamometers and power meters, instruments for use in air surveying, and improvements in the optophone.

Barr, Robert (1850-1912), Eng. novelist, *b.* in Glasgow. Educated at Normal School, Toronto; headmaster of Central School, Windsor, Canada, till 1876. Then joined editorial staff of *Detroit Free Press*, his contributions to which were signed 'Luke Sharp.' In 1881 *B.* came to England, founded the weekly *Free Press*, and in 1892 founded the *Idler* with Jerome K. Jerome, remaining co-editor till 1895. Among his best works are *In the Midst of Alarms*, 1894; *A Woman Intervenes*, 1896; *Revenge!*, 1896; *The Countess Tekla*, 1899; *The Strong Arm*, 1900; *The Unchanging East*, 1900; *The Tempestuous Petticoat*, 1905; *Stranleigh's Millions*, 1908; *The Sword-maker*, 1910.

Barra, tn. about 3 or 4 m. E. of Naples. Pop. of commune 13,000.

Barra, is. of Inverness-shire, Scotland, near the S. extremity of the Outer Hebrides. Historically it is famous as the scene of the victory of Robert Bruce, 1308. Pop. 2000.

Barraokpur, tn. of dist. Twenty-four Parganas, Bengal, India, on R. Hugli, 15 m. N. of Calcutta. It is a European health resort and country residence of the viceroy. There were sepoy mutinies here in 1824 and 1857. The native name of Charnack is reminiscent of Job Charnock, the founder of Calcutta. Pop. 39,000.

Barracks, set of buildings with all conveniences for human habitation and generally used for the accommodation of units of the fighting forces and police. The nature, site, and construction of barracks were usually determined by the strategic or other employment of the troops, etc., which had to occupy them. Hence those of the sovereign's bodyguard were built in London and at places near

the king's residences; *B.* near the coast are constructed more in the nature of forts; whilst the sites of those at depots in the country are chosen more from health reasons. The *B.* include parade ground and open spaces for drill and manœuvres. *B.* are generally built in blocks, to accommodate 2 companies each, and are divided into officers' quarters, men's quarters, and quarters for married soldiers and sergeants. The officers' mess usually consists of a dining-room, ante-room, billiard-room, and offices. Each officer has his own private rooms, the number varying according to rank, and special accommodation is made for married officers. The married soldiers usually have separate houses each, with rooms varying in number according to the number of their children. The soldiers are catered for by the regimental institute, which consists of the canteen and the recreation establishment. Reading-rooms, coffee bars, gymnasiums, billiard-rooms, and other recreation rooms are provided in *B.* to make the life as comfortable and attractive as possible. There are separate buildings, constructed and set apart for hospitals, stables, stores, miniature rifle ranges, guard-rooms, cook-houses, schoolrooms for children, and in the larger garrisons, garrison schools and libraries.

Formerly accommodation was not provided for soldiers, who were accordingly billeted on the people. It was not till the end of the eighteenth century that permanent buildings for soldiers came to be built. Before the nineteenth century soldiers were accommodated in scattered billets, which was unsound from a tactical point of view when troops were needed to turn out suddenly against a threatened point or to proceed on special duty where speed was essential. At the headquarters of every fighting force there is a department charged with the duty of looking after *B.* in all their aspects, including prevention against fire.

Barracuda, **Barracouta**, or **Barracoota**, large pike-like fish of the family Sphyrænidæ and order Teleostei. *Bs.* are carnivorous, and some varieties are esteemed as a food, though at times they are poisonous.

Barracfranca, tn. of Sicily, situated 1470 ft. above the level of the sea, 10 m. S.E. of Caltanissetta, in the prov. of that name. Pop. 12,000.

Barrage: (1) Engineering: an artificial obstruction placed in a water-course to obtain increased depth of water. (2) Artillery: a curtain of shell-fire produced by a number of shells being fired simultaneously by guns on to a definite line. *A. B.* differs from a bombardment (*q.v.*) in that in the former the fall of the shells takes a linear formation, whereas in the latter they are grouped over an area. *B. fire* was introduced in the First World War, when as communications were difficult it became necessary for *B. fire* to be pre-arranged and carried out according to a definite time-table. The procedure was for artillery to 'put down' a 'creeping' *B.* on a certain line for a certain time

during which the infantry moved forward as far as possible under the protection of the falling shells. The B. was usually put down on an objective which the infantry prepared to assault as soon as the B. 'lifted.' At the time scheduled the B. would come down on the next objective, and the same procedure would be repeated until the B. had 'crept' to its final position, where it 'stood' for a time, and thus became a 'standing' B. Creeping Bs. were used to screen troops in retreat as well as in advance, and a 'flank' B. was used to give protection to troops on their flank. A combination of the creeping and flank B. was a 'box B.,' which gave all-round protection. See under ANTI-AIRCRAFT DEFENCE; ARTILLERY.

Barra Manza, tn. of Brazil, on the r. b. of the Parahiba do Sul, 70 m. N.W. of Rio de Janeiro. Pop. 12,000.

Barramunda, name applied to the Ceratodus, a diploid fish of the family Sirenoidae with a single lung. Its haunts are the rivs. of Queensland.

Barranquilla, cap. of prov. of same name, Bolívar, Colombia, on Magdalena R., near its mouth, 3 m. from its seaport, Sabanilla, and 18½ from the port Puerto Colombia. Standing at the head of the navigation of the riv., which is useless at its entrance into the sea, the tn. has a busy steamship traffic, and grew rapidly though suffering from periodical floods. It is the largest commercial centre in Colombia: has many manufs. and exports coffee and hides. There is a wireless station. Pop. (1942) 188,500.

Barrantes, Vincente (1829-98), Sp. poet and publicist, b. at Badajoz, but later removed to Madrid, where he entered literary and political life, holding sev. appointments in Spain and the Philippines. In 1872 he was made a member of the Sp. Academy. His works, for the audacity of which he was sev. times fined, include *Siempre Tarde*, 1851; *Juan de Padilla*, 1855-6; *La Viuda de Padilla*, 1857; *Narraciones Extrameñas*, 1872-3; *Cuentos y Leyendas*, 1875; *Guerras Pírricas de Filipinas*, 1878.

Barras, Paul Jean François Nicolas, Comte de (1755-1829), Fr. revolutionary, b. at Fox-Amphoux in Var, of an anc. noble family. In 1775 he entered the army, and went twice to India. When the Revolution commenced he became one of its warmest partisans, and was a member of the Jacobins' Club from its commencement. Representing Var in the National Convention, he voted for the death of Louis XVI.; and he also took an active part in the siege of Toulon. He opposed Robespierre, and was mainly instrumental for his downfall. On the 13th Vendémiaire (Oct. 5, 1795), the Convention appointed B. general-in-chief for the second time, and his success on this occasion was chiefly owing to Bonaparte, to whom he had confided the command of the artillery. The anarchists were put down and B. was nominated one of the five members of the Directory. On the 18th Fructidor (Sept. 4, 1797), he was again invested with dictatorial powers, and transported many of his opponents.

The affair of the 30th Prairial (May 18, 1799), however, shook the foundation of the Directory. Bonaparte, seconded by Sleyes, effected the revolution of the 18th Brumaire (Nov. 9, 1799), and was made first consul. After this the power of B. was annihilated. Implicated in a conspiracy, he was exiled to Rome, but returned to Paris in 1814. In 1815 he again left Paris, but returned on the disembarkation of Napoleon and took up his residence at Chaillot. See his *Memoirs*, pub. by Dumuy, 1895.

Barratry (from O.F. *baraterie*, fraud) is in Eng. law a term applied to the offence of inciting the subjects of the king to riot. The offence against law is actionable only when committed frequently, and at least 3 breaches of the law must be proved against the offender. In the case of a lawyer or solicitor offending in this way he is by the law of England unable to practise further. The offence in Scotland is not the same, but is the crime of a judge who barter justice for money, i.e. is guilty of corrupt practices. The offence of B. is also known in marine insurance: in that case it is an offence by the masters or crew of a ship which is to the detriment of the owners or insurers of that ship. It is usually insured against in marine insurance policies.

Barraux, vil. in the Fr. dept. of Isère, in the arron. of, and 23 m. from, Grenoble. On the Isère, upwards of a mile from B., is B. Fort, built by Emmanuel of Savoy in 1596 and captured by Lesdignières. Pop. 1200.

Barre, tn. of Washington co., Vermont, U.S.A., 6 m. S.E. of Montpelier, famous for its granite quarries. Pop. 11,000.

Barré, name given to a group of S. Amer. tribes of Arawakan stock, who occupy the country round the Upper Rio Negro, in N. Brazil, across the Casiquiare, Guiana, the Atabapo as far as Venezuela. They are an independent, progressive race, their language being spread throughout a wide region.

Barré, Isaac (1726-1802), Irish officer and politician, b. in Dublin, the son of a Fr. refugee; served under Wolfe, and was wounded at Quebec in 1759; entered Parliament in 1761, and consistently defended the rights of the colonies, notably in a famous speech against the Stamp Act in 1765. He was the originator of the term 'Sons of Liberty' applied to the Amers. In 1790 he retired owing to blindness consequent upon his old wound. He is one of those to whom the *Letters of Junius* have been ascribed.

Barrel, large wooden vessel for holding liquids or solids, with circular heads. The term is also given to various measures. A barrel of beer contains 36 imperial gallons, of wine 31½ gallons, of butter 224 pounds, etc. In the U.S.A. flour and beef are sold in the same way, a B. of flour containing 196 pounds, and one of beef 200 pounds.

Barrelier, Jacques (1606-73), Fr. botanist, was b. in Paris. He was educated for the medical profession, but abandoned it, and in 1635 took the vows of the order of Dominicans. In 1646 he was appointed assistant to the general of the order of

Dominicans, and in that capacity traversed S. France, Spain, and Italy. During his travels he collected plants, of which he made drawings, and had them engraved. He returned to Paris, 1672, to complete his work on botany, but *d.* in 1673. After his death his collections were dispersed, and some were burnt. The copper plates, however, were collected and pub. by Antoine de Jussieu, who supplied descriptions in the place of those which had been destroyed.

Barrel Organ, portable mechanical musical instrument with a limited number of tunes. Provided with hymn tunes, it was formerly used in some churches, but was ousted by the harmonium; at the end of the eighteenth century it was first used in the street. The organ has a wooden cylinder furnished with pegs or staples, which, when revolved, opens a series of valves to admit the air to a set of pipes, and thus produces the sounds.

Barren Flowers are more commonly known as male flowers. They bear stamens but not carpels.

Barren Island, name given to 4 different is. in various parts of the world. The first is a sandy is. off the S. shore of Long Is., King's co., New York. The second is an is. on the W. coast of Placentia Bay, off Newfoundland. The third is one of the group known as Hunter Is., off the N.E. point of Tasmania. The fourth is a volcanic is. in the bay of Bengal, situated to the E. of the Andaman Is.

Barrenness, see STERILITY.

Barrenwort (*Epimedium alpinum*), species of Old World Berberidaceæ, cultivated in Britain. It is a self-pollinated plant, with nectararies, and the seed has a membranous aril.

Barres, Auguste Maurice (1862-1923), Fr. politician and man of letters. After studying at Nancy he went in 1882 to Paris, and adopted the journalistic profession. He was elected a deputy for Nancy in 1889, and sat in the chamber till 1893. Later, returned for the Seine div. and elected member of the Académie Française. He was an individualist by conviction, and repudiated all social discipline. His works are obscure in many places, but his analysis is delicate, and his style, though often affected, is pure. A thorough-going Nationalist, he shared with Maurras in moulding the ideals of this party. The First World War gave him his opportunity, which he embraced with vigour. To the *Echo de Paris* he contributed daily for 4 years. His works include *L'Ennemi des lois*, 1893; *Le Culte du mot*, 1893; *Une Journée parlementaire*, 1894; *La Colline inspirée*, 1913; *L'Âme française et la guerre*, 1915; *Le Génie du Rhin*, 1921; *Un Jardin sur l'Oronte*, 1922. The first vols. of his *Chronique de la Grande Guerre*, appeared in 1931. See studies by J. N. Faure-Biguot (Paris), 1924, and A. Blanc-Perdier (Paris), 1925.

Barret, George (1732-84), Irish landscape painter. In 1764 he obtained a 50-guinea premium from the Society of Arts, London; was one of the original members of the Royal Academy, founded 1768;

and towards the close of his life was master painter to Chelsea Hospital. His landscapes are bold and natural in design, but his colouring is somewhat heavy. He painted also in water-colours, and executed a few etchings.

Barret, William (1733-89), Eng. surgeon and antiquary, *b.* at Notton, Wiltshire. At the age of 22 he passed his examination for a surgeon, and settled down to practise in Bristol. He determined to write a hist. of the city. This work is famous because of the number of forgeries with which Chatterton, 'the marvellous boy,' supplied B., and which the latter accepted without question. He was made a fellow of the Society of Antiquaries on Nov. 9, 1775, before the publication of his book. This appeared in 1789, as a quarto vol. of over 700 pages, with the title, *The History and Antiquities of the City of Bristol*, compiled from original records and authentic manuscripts, in public offices and private hands. But it met with such ridicule that B. was overwhelmed, and *d.* at Higham, in Somerset, in the following Sept.

Barrett, John (b. 1866), Amer. arbitrator, *b.* at Grafton, Vermont. Amer. minister to Slam in 1894-98, when he settled by arbitration large Amer. claims in that country. He was U.S. delegate in 1901-2 to the second Pan-Amer. Conference, Mexico; and 1907-20, director of the Pan-Amer. Union, which he developed as the prin. official agency for fostering the growth of Pan-Amer. trade. Publications: *Admiral George Dewey*, 1899; *Pan-American Union*, 1911; *Panama Canal—What it is—What it means*, 1913; and *Pan-America and Pan-Americanism*, 1922; *The Call of South America*, 1924.

Barrett, Lawrence (1831-91), Amer. actor, *b.* at Paterson, New Jersey. He made his first appearance on the boards at Detroit, Michigan, as Murad in *The French Spy* in 1853. In 1857-58 he was associated with the brilliant actor Edwin Booth; subsequently he became the leading member of his company, and worked with him from 1887 till his death. B. was a versatile actor and had a high understanding of his art. His best part was Cassius; he also took the leading parts in many Shakespearean plays. He wrote *Edwin Booth and his Contemporaries*, 1886.

Barrett, Sir William Fletcher (1844-1925), Eng. physicist. Educated in Manchester. In 1863 he was working under Prof. Tyndall. He did effective research work in alloys and especially on their electric and magnetic purposes. 'Stalloy,' a silicon-iron alloy used by electrical engineers, was his discovery. His prin. research work, however, was in the uses of the divining rod. Was lecturer in physics in the Royal School of Naval Architects, and later, prof. of physics in Dublin Univ. Also one of the founders of the Society for Psychical Research.

Barrett, Wilson (1846-1904), Eng. actor, *b.* in Essex. He first appeared at Halifax in 1864 in *East Lynne*. As manager of the Princess's Theatre he produced *The Lights of London* and *The Silver King*.

In 1884 he appeared in *Hamlet*, and later visited America and Australia. In 1895 he produced *The Sign of the Cross*.

Barrhead, tn. of Renfrewshire, Scotland, 7 m. S.W. of Glasgow by rail. Porcelain and sanitary appliances are manufactured, and it contains also cotton mills, calico-printing works, bleaching and dyeing works, engineering works, and shawl-weaving mills. Pop. 12,000.

Barri, Giraldu de, or **Sylvester Giraldu**, see GIRALDUS CAMBRENSIS.

Barrias, Louis Ernest (1841-1905), Fr. sculptor, was b. in Paris. He studied at first under Léon Cogniet, but recognising that sculpture was his true *métier*, he worked under Joffroy. He was awarded the Prix de Rome in 1865, and a medal at the Salon of 1870. His 2 works for the Salon of 1872, one in marble, the other in bronze, were of such excellence that he was awarded a first-class medal. He was awarded a medal of honour and a decoration for his piece at the 1878 Salon, entitled 'The First Funeral,' representing Adam and Eve bearing Abel's body.

Barriade, military term used for any obstruction formed to check the advance of an enemy. They may be constructed of palisades and earth or sand-bags, with loop-holes cut for firing, but as they are generally thrown up in haste any material to hand, such as loaded carts, heaps of stones, planking, felled trees, etc., is used. In 1358 Bs. were set up in the streets of Paris against the Dauphin Charles, and again in 1588 Henry IV.'s troops were prevented from entering Paris by the Bs. They were used again in Paris in the revolutions of 1848 and 1850.

Barrie, cap. tn. of Simcoe co., Ontario, Canada, on Kempenfeldt Bay, L. Simcoe, 64 m. N.W. of Toronto. It is a railway centre, and has manufs. of carriages, wool, leather, and machinery. Pop. 7800.

Barrie, Sir James Matthew (1860-1937), Scottish novelist and dramatist, president of the Society of Authors from 1923; rector of St. Andrews Univ., 1919-22; elected chancellor of Edinburgh Univ., May 30, 1930; created a baronet in 1913; b. May 9, 1860, at Kilmuir, in Forfarshire, was educated at Dumfries Academy and Edinburgh Univ. After some experience as a journalist in Nottingham he came to London and contributed to, among other papers, the *St. James's Gazette*, *British Weekly* (as 'Gavin Ogilvy'), *National Observer*, and *Speaker*. In 1887, he pub. his first book, *Better Dead*, and in the next year *Auld Licht Idylls* presented an idealisation of his native vil. as 'Thrums,' with its life and humour. The theme is not quite dropped in *When a Man's Single*, primarily a humorous account of journalistic life, and it is again the chief interest in *A Window in Thrums*, 1889. In 1891 came *My Lady Nicotine* and *The Little Minister*, which excellently showed B.'s whimsical humour, pathos, and control of action and dialogue. *Margaret Ogilvy* (about his mother), 1894, was followed by *Sentimental Tommy* and *Tommy and Grizel*, 1900. Other non-dramatic works of his are: *An Edinburgh Eleven*, 1889; *Scot-*

land's Lament, 1895; *The Little White Bird*, 1902; *Peter Pan in Kensington Gardens*, 1906; *Peter and Wendy*, 1911; *Half Hours*, 1914; *Who Was Sarah Fendley*, 1917; *Courage*, 1922; *Cricket*, 1926. *The Greenwood Hat: the Memoir of James Anon*, 1930, dealing with his early life, was written by him for private circulation. His *Farewell, Miss Julie Logan* (*Times Christmas Supplement*, 1931) is an example of the perfect short story. The fame of B. rests mostly on his plays, those of his maturity being full of wit, imagination, and fantasy. The following is a table of his dramatic works, with the dates of their first theatre presentation in London.

Richard Savage (with Marlott Watson), (1891); *Ibsen's Ghost*, or *Toole up to Date* (1891); *Walker*, London (1892); *Jane Annie* (comic opera, with Conan Doyle) (1893); *Becky Sharp* (1893); *The Professor's Love Story* (1894); *The Little Minister* (1897); *The Wedding Guest* (1900); *Quality Street* (1902); *The Admirable Crichton* (1902); *Little Mary* (tracing national ills to indigestion) (1903); *Peter Pan* (the most popular children's play of the century) (1904); *Alice Sit-by-the-Fire* (1905); *Pantaloon* (1905); *Josephine* (political skit) (1906); *Punch* (toy tragedy, a compliment to Bernard Shaw) (1906); *What Every Woman Knows* (1908); *The Twelve-Pound Look* (1910); *Old Friends* (1910); *A Slice of Life* (1910); *Rosalind* (1912); *The Will* (1913); *The Adored One* (Legend of Leonora) (1913); *Half an Hour* (1913); *Der Tag* (1914); *Rosy Rapture* (musical burlesque) (1915); *The New Word* (1915); *The Fatal Typist* (1915); *The Real Thing* (1916); *A Kiss for Cinderella* (1916); *Shakespeare's Legacy* (1916); *The Old Lady Shows her Medals* (1917); *Seven Women* (1917); *Dear Brutus* (a study of Might-Have-Beens) (1917); *A Well-Remembered Voice* (1918); *The Truth About the Russian Dancers* (1920); *Mary Rose* (1920); *Shall We Join the Ladies?* (an isolated First Act) (1921); *Barbara's Wedding* (1927). He wrote *The Boy David* especially for Elizabeth Bergner, who appeared in the title role in Edinburgh and London in 1937. See bibliography by H. Garland, 1928; also T. Moulst, *Barrie: a Critical Estimate*, 1936; J. Roy, *James Matthew Barrie: an Appreciation*, 1937; W. A. Darlington, J. M. Barrie, 1938; Patrick Chalmers, *The Barrie Inspiration*, 1938; D. Mackail, *The Story of J. M. B.*, 1941.

Barrier (Fr. *barrière*), in fortification, term applied to a chain of military posts protecting the frontiers of a country. It signifies also a wall of strong timbers enclosing an area (stockade), or protecting a passage. In some part of a B. is a gate usually formed of 2 parts, opening in the middle, and frequently musket-proof, being made of strong timbers in vertical and horizontal positions, with diagonal braces.

Barrier Act, act passed by the General Assembly of the Church of Scotland in 1697 providing that any proposed change in the church laws must be sanctioned by a majority of the Presbyterians. The

object of this act was to guard against hasty legislation in the church.

Barrier Reef, The Great, see GREAT BARRIER REEF.

Barrier Treaty, name given to 3 treaties which were drawn up during or immediately after the war of the Sp. Succession. It was essential to the Dutch that, in order to resist possible Fr. aggressions, they should have control of the 'barrier' fortresses of the Netherlands. The chief fortresses which the Dutch demanded were Ypres, Tournai, Mons, Charleroi, and Ghent. In return for a recognition of the Protestant and Hanoverian succession, Great Britain signed a treaty in 1709 by which she undertook that the Dutch should be provided with an adequate barrier of fortresses in the Netherlands. The number of fortresses was reduced by the second treaty to practically those already named (1713). In the treaty which was signed in 1714 by the emperor and Louis XIV. the Dutch received their barrier fortresses.

Barring-out, practice formerly common in schools, by which the boys barred the doors of the school against the master. The time chosen was usually a few days before the commencement of the vacations. Addison was the leader of a B. at the Grammar School, Lichfield, 1685 (see Johnson's *Life of Addison*); and at the High School, Edinburgh, in 1595 there was a serious B. in which a magistrate lost his life whilst endeavouring to force an entrance. In the statutes of Witton School, near Northwich, in Cheshire, founded by Sir John Deane, 1558, the observance of the custom by the scholars is directed.

Barrington, Daines (1727-1800), Eng. jurist, fourth son of John Shute B. He was called to the Bar in 1749, and made a pious Welsh judge in 1757. In 1785 he gave up all public employments except the place of commissary-general of the stores at Gibraltar. Of his writings the most important is *Observations upon the Statutes, chiefly the more ancient, from Magna Carta to the 21 Jac. I. c. 27*, first pub. 1766. Others are: *Researches respecting a North-west Passage*; papers on local antiquities in the *Archæologia*; and essays in the *Philosophical Transactions*. Many of his periodical publications were pub. in 1781 under the title of *Miscellanies on Various Subjects*.

Barrington, George (properly Waldron, George) (1755-c. 1840), Irish author, b. at Maynooth, Kildare; joined a band of strolling players in 1771, and later became a professional thief in London, moving in the highest circles. His most noted theft was that of a snuff-box worth £30,000 from Prince Orloff. In 1790 he was transported to Botany Bay, but was released after 2 of his 7 years' sentence, and became superintendent of convicts and later high constable at Paramatta, N.S.W. His works include: *A Voyage to Botany Bay*, 1801; *The History of New South Wales*, 1802; *The History of New Holland*, 1808. See R. S. Lambert, *The Prince of Pick-pockets*, 1830.

Barrington, John Shute, first Viscount

(1678-1734), Eng. polemical writer and politician, b. in Hertfordshire; called to the Bar in 1699; was one of the commissioners sent to Scotland to gain the favour of the Presbyterians for the Union; became commissioner of customs in 1708; entered Parliament in 1715. In 1720 he was made baron and viscount in Ireland. He was expelled from Parliament in 1723 for his connection with the Harburg lottery. Works include: *Essay upon the Interests of England in Respect to Protestants Dissenting*, etc., 1701; *Rights of Protestant Dissenters*, 1704-5; *Dissuasive from Jacobitism*, 1713; *Miscellanea Sacra*, 1725.

Barrington, Rutland (1853-1922), Eng. actor, b. at Fenge, son of J. G. Fleet (Barrington being a stage name), and nephew of Emily Faithfull. Educated Merchant Taylors' School; made his first appearance on stage at age of 21; thereafter joined the D'Oyly Carte management and played in all Gilbert and Sullivan operas except *The Yeomen of the Guard*. He wrote humorous articles for *Punch*, also one play.

Barrington, Samuel (1729-1800), Brit. admiral, son of Viscount B. Entered the Navy under Lord George Gordon in 1749; became a lieutenant in 1745; commanded the sloop *Weasel* in 1747; and later in that year, in the *Bellona*, captured the Fr. *Duc de Chartres*. He served in the Mediterranean and on the Guinea coast; in 1754-55 accompanied Commodore Keppel to N. America; in 1757 served under Sir Edward Hawke in the Basque Roads expedition; and in 1761 under Keppel at Belle Isle. In 1759, while commanding the *Achilles*, he captured the *Comte de St. Florentin*. He was made commander-in-chief in the W. Indies in 1778, where he defeated the Fr. under d'Estaing. He was in the action off Grenada in 1779, and was second in command to Lord Howe at the relief of Gibraltar in 1782. He was made an admiral in 1787.

Barrington, Shute (1734-1826), Eng. churchman, sixth and youngest son of John Shute, Viscount B., was b. at Becket, in Berkshire. He was educated at Eton and Merton College, Oxford. He was ordained in 1756, and appointed chaplain-in-ordinary to George III. in 1760. He was made canon of Christ Church in 1761, and took his D.C.L. in the following year. He was appointed a canon of St. Paul's in 1768, and bishop of Llandaff in 1769, of Salisbury in 1782, and of Durham in 1791. He was a defender of the Protestant establishment, and opposed to the acquisition of political power by the Rom. Catholics.

Barrington, William Wildman Shute, second Viscount (1717-93), Eng. politician, eldest son of the first Viscount B. After making the grand tour he returned to England in 1738, and in 1740 was elected M.P. for Berwick-on-Tweed. In 1745 he formulated a plan for a national militia, and in the same year took his seat in the Irish House of Lords. He was one of the lords commissioners of the Admiralty in 1746, in 1754 M.P. for Plymouth, and in 1755 a member of the

Privy Council. He was secretary at war in 1755, treasurer of the exchequer in 1761, treasurer of the navy in 1764, and in 1765 secretary at war again. He was joint postmaster-general from Jan. to Apr. 1782, and retired on a pension of £2000 per annum.

Barrios, Justo Rufino (1835-85), Guatemalan politician, b. at San Lorenzo, Guatemala. He took part in the unsuccessful liberal insurrection under Serapio Cruz against Cerna, the president of Guatemala, in 1867-69. He was obliged to flee to Mexico, but in 1871 he returned and defeated Cerna, and assisted in making Granados president. Two years later he overthrew Granados and took his place, being re-elected in 1876 and again in 1880. Seeing that his ideal of a union of Central Amer. states would never be attained by peaceful means, he invaded Salvador in an attempt to bring about his aims by force. He was, however, defeated and killed at Chalchurapa.

Barrister, member of that branch of the law which has the exclusive right to practise and be heard in the superior courts of law in England and Ireland. For the Scottish equivalent branch see **ADVOCATE**. The right to practise at the Bar is confined to the 4 Eng. Inns of Court (q.v.), viz. Lincoln's Inn, Inner and Middle Temples, and Gray's Inn, and to the King's Inns in Ireland. A student is 'admitted' to an Inn by passing a preliminary examination (excused for those who have passed certain univ. examinations), and paying fees. He then 'keeps' 12 terms by eating dinners in the hall of his Inn, 6 in each legal term, 3 for univ. members. On passing the examinations of the Council of Legal Education and paying fees he is 'called to the Bar' by the benchers of his Inn, who may refuse to admit. They also may 'disbar' or expel a barrister for misconduct. Until after the First World War clergymen, women, solicitors, or accountants in practice were not admitted, but now both women and solicitors can qualify. On his call or before, a B. usually passes a year as pupil in the chambers of a practising B. and if he intends to practise at the common law Bar usually joins a circuit (q.v.). Before undertaking a case he must be instructed in a 'brief' (q.v.) by a solicitor, but in criminal cases he may be engaged directly in open court. He drafts 'pleadings' (q.v.), gives opinions on the case, advice on evidence, etc., and it is his especial and peculiar function to conduct the case in court. A B. is not answerable for anything said by him in court so long as it is suggested by his instructions and is relevant to the case. He may not sue for his fees, but is not obliged to return them though he cannot attend the court. He is not liable for negligence. The attorney- and solicitor-generals are leaders of the Bar; king's counsels (K.C.s) are appointed by the lord chancellor on application; they are called 'within the Bar' and are said to 'take silk,' their gown of special form being of silk for dress occasions, when they also wear a full-bottomed wig (see

KING'S COUNSEL). The ordinary B. or junior Bar, wears a 'stuff' gown. Counsel do not wear wig or gown when appearing before justices of the peace.

Barron, Clarence Walker (1855-1928), Amer. financial editor and pub., b. at Boston, Massachusetts; educated in the Eng. high school in that city; and d. at Battle Creek, Michigan. He began his career by joining, in 1873, the staff of the Boston *Daily News*, in which his article on the debate between Wendell Phillips and William Lloyd Garrison attracted much attention. Joining the *Boston Transcript* in 1875, he founded, 12 years later, the Boston News Bureau, an agency publishing financial news in a daily bulletin. After founding a like agency in Philadelphia, he went to New York in 1901. Bought the *Wall Street Journal* in the same year and founded *Barron's National Financial Weekly* in 1921. Wrote among other books *War Finance*, 1919, and *A World Remaking*, 1920.

Barron, James (1768-1851), Amer. commodore, b. in Virginia; entered Amer. Navy in 1798; in 1806 surrendered the *Chesapeake* to the Brit. frigate *Leopard*. He was court-martialled and removed from the service for 5 years. In 1820 he challenged Decatur (an officer whom he suspected to be principally instrumental in keeping him ashore) to a duel, and mortally wounded him; he was wounded himself, but recovered, and in 1839 was senior officer of the Amer. Navy.

Barros, João da (1496-1570), Portuguese historian. In 1522 he was sent as governor to St. George d'Elmina or São Jorge da Mina, on the Guinea coast; in 1525, recalled to Lisbon, he was appointed treasurer to the colonial dept., and afterwards agent-general for the colonies. While he held this office he composed his work, *Asia portuguesa*.

Barrosa, vil. of Andalusia, Spain, on the coast, 16 m. S.E. of Cadiz. The scene of the victory of General Graham over the Fr. under Victor in Mar. 1811, being one of the first Eng. victories in the Peninsular war.

Barros-Arana, Diego, Chilean historian (1824-1907). He was prof. of geography at the univ. of Santiago, and Chile minister at Buenos Aires. He formed one of the commission which studied the delimitation of the frontier between Chile and the Argentine Republic. His works, which are in Sp., include: *General History of the Independence of Chile, 1854-1857*; *Elements of Physical Geography, 1881*; *General History of Chile, 1884*.

Barroso, Miguel (1538-90). Sp. painter, b. at Consuegra. According to Palomino, he was a pupil of Becerra, and distinguished both as architect and painter. Employed by Philip II. in the Escorial, he painted a number of frescoes in the chief cloister there, including 'Resurrection,' 'Christ appearing to the Apostles,' 'Descent of the Holy Ghost,' 'St. Paul Preaching.'

Barrot, Camille Hyacinthe Odilon (1791-1873), Fr. orator and statesman, b. at Villefort. He studied law in Paris, and was called to the Bar there. Though

remaining a supporter of monarchy, he was dissatisfied with the restoration gov.; in 1827 he joined the 'Aide-toi' association. He took a prominent part in the revolution of July 1830, being a member of the municipal commission of the Hôtel de Ville, and one of the 3 commissioners appointed to conduct Charles X. out of France. He was then appointed prefect of the Seine dept. He advocated a constitutional monarchy on democratic lines. In the movement of 1847, which culminated the next year in revolution, he was again prominent. The revolution came as a surprise to him, and he acquiesced in the republic, and accepted office, but he was soon dismissed. After the *coup d'état* of 1851, he retired into

sions of the departed. A vivid account of the building of the B. of Hector is given in the *Iliad*, and Herodotus gives a detailed description of a similar custom in connection with the burial of the Scythian chiefs. Amongst the Vikings it was a custom to place the dead man on the deck of his ship and erect the B. over it. The largest Eng. example is Silbury Hill, 130 ft. high. See W. Greenwell, *British Barrows*, 1878; O. G. S. Crawford, *Long Barrows and Stone Circles of the Cotswolds and the Welsh Marches*, 1925.

Barrow, riv. of Eire; rises on the N.E. side of Slieve Bloom Mts., Queen's Co., flows E. to border of co. Kildare, then S. With the Suir, which it joins 29 m. from the sea, and the Nore, which flows into it



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SILBURY HILL, WILTSHIRE

private life. After the fall of the empire, Thiers nominated him president of the Council of State, but he *d.* after having held this position only a year.

Barrow (A.-S. *beorg*, hill or hillock), name given to the burial mounds erected by primitive peoples. Remains of Bs. have been found all over Europe, in N. Africa, Asia Minor, various other parts of Asia and N. America. The structure, size and internal arrangement of the Bs. differ widely. They were made of earth or stones, and the ground-plan was oval, round, or oblong. The long Bs. of the Stone Age in Great Britain contained one or more chambers entered by a passage under the higher and broader end of the B. They were from 200 to 300 ft. in length, with a width of from 60 to 80 ft. In Ireland round Bs. were the rule. The practice of B. burial was accompanied both by cremation and by inhumation. The introduction of cremation in the Stone Age is thought by some to have introduced the vogue of smaller Bs.—a distinguishing feature of the Bronze Age, in which cremation was common. In the Iron Age the size again becomes larger. With the remains were frequently buried the favourite animal and familiar posses-

2 m. above New Ross, it forms the estuary of Waterford harbour. Length 119 m. Navigable for vessels of 300 tons as far as New Ross, for barges up to Athy. Here it joins the Grand Canal.

Barrow, Cape, most northerly point of Alaska. There is a gov. station on the cape.

Barrow, Isaac (1630-77), Eng. divine and mathematician, son of the linen-draper to Charles I., educated at Charterhouse and Felsted; entered Peterhouse College, Cambridge, 1643, under his uncle, who was a fellow. The Presbyterians having taken possession of Peterhouse, B. removed to Trinity College, Cambridge. He became a fellow in 1647; took his M.A. 1652, and was made D.D. by royal mandate in 1670. He first intended to study physic, but turned to theology; gradually he was led to astronomy and geometry. Meanwhile he studied the classics and was recommended for the chair of Gk. at Cambridge; he lost it, being suspected of Arminianism. Then he went abroad (1655-59), travelling through Europe. In 1660 he was chosen Gk. prof. and in 1662 Gresham prof. of geometry, but this he resigned on his appointment to be Lucasian prof. of

mathematics, 1663. This he resigned (1669) in favour of his great pupil Isaac Newton. In 1672 Charles II. (whose neglect of him he celebrated in his well-known *Lat. lines*) appointed him master of Trinity College, and he exerted himself to form a library. He d. young considering his reputation, at the age of 47. He never married. His 2 mathematical works are: *Lectiones Opticae* and *Lectiones Geometricae*, both of which were esteemed by Newton. Among his theological works are: *Exposition of the Creed, Decalogue, and Sacraments* (1669). His treatise on the pope's supremacy is still admired as a specimen of controversy. An ed. of these was ed. by Napier with a memoir by Whewell, 9 vols., 1839.

Barrow, Sir John (1764-1848), Eng. diplomatist, writer, and patron of Arctic exploration, b. at Drayley Beck, Lancashire. He became a time-keeper in a Liverpool iron foundry, but managed to educate himself. After a trip to sea in a Greenland whaler he became a teacher of mathematics at an academy in Greenwich. Here he was fortunate enough to secure the interest of Sir George Staunton, who obtained for him (1792) the post of secretary to Lord Macartney, the first Brit. ambas. to China. He mastered the Chinese language and studied Chinese literature and science. On the appointment of Macartney to the governorship of the Cape of Good Hope, B. took part in the settlement of the affairs of that colony. From 1804 to 1845 he was second secretary of the Admiralty. He was made a baronet in 1835. He was a fellow of the Royal Society, and one of the chief founders of the Royal Geog. Society. His publications include: *History of Voyages into the Arctic Regions*, 1818; an autobiography, 1847; and various books of travel.

Barrow-in-Furness, seaport, manuf. tn., and municipal co., and parl. bor., Lancashire, Eng., 9 m. S.W. of Ulverston, 268 m. N.N.W. of London. Pop. 66,000. Here are situated the famous shipbuilding yards of Vickers Sons & Maxim, Ltd., the Bessemer steel works, and other large industries connected with iron and copper, which are found in the vicinity. There are also jute and flax factories, engineering shops, paper and pulp works, etc. There is an active trade at the port in imports of cattle, general merchandise, timber, flour, grain, coal, etc., and exports, among other things, of steel rails, pig-iron, and iron ore. The rise of B. from a fishing vil. to an active industrial centre dates from the discovery in 1840 of hæmatite ore at Park, near B. The establishment of mines and smelting works soon followed, and the construction of many miles of railway by the Furness Railway Co. The docks, 4 in number, cover an area of 280 ac. Noteworthy buildings are the town hall, erected at a cost of £80,000, and the picturesque ruins of Furness Abbey. B. returns one member to Parliament. The residential areas suffered severely from air attack during the Second World War, principally in May 1941; over 600 houses were de-

stroyed, and some 14,000 others damaged, also churches and schools.

Barrow Point, long sandy point on the N. coast of Alaska.

Barrow Strait, Canada, joins Lancaster Sound and Melville Sound. Average breadth 50 m. Discovered by Parry, and named by him after Sir John B. (q.v.).

Barraulet, see **HERALDRY**.

Barry, term in heraldry applied to a shield that is divided by horizontal lines into an even number of partitions of interchangeably disposed tinctures. According to the number of portions it is termed *B. of six, eight, or ten pieces*. *B. of six* is the most common, and figures in the armorial bearings of many noble families. *Barry-bendy* is the term used of a shield divided *B.* and *bendy*, i.e. by lines running from dexter chief to sinister base, etc., the tinctures being interchanged. *Barry-pyly* is the term applied to a shield divided into an even number of partitions by plices placed barwise across it.

Barry: (1) Is. in Bristol Channel. (2) Seaport of Glamorganshire, S. Wales, 7 m. S.W. of Cardiff, opposite B. Is. It has a tidal basin of 90 ac. between the mainland and the is., and large docks, opened in 1889, which cover 114 ac. and have accommodation for the largest vessels. There is an export trade in coal and iron, and the tn. is managed by a most progressive municipality. Pop. 39,000. (3) The name of a parish of Forfarshire, Scotland, 72 m. S.W. by W. of Arbroath. The golf links were acquired by Gov. in 1892 for military manoeuvres, etc. It has an area of 5328 ac. and a pop. of 6000.

Barry, Alfred (1826-1910), Eng. bishop, educated at King's College, London, and at Cambridge. Headmaster of Leeds Grammar School, 1854-62; prin. of Cheltenham, 1862; of King's College, London, 1868; examining chaplain to bishop of Bath and Wells, 1869; canon of Worcester, 1871; of Westminster, 1881; member of London School Board, 1871-1877; chaplain in ordinary to the queen, 1877; primate of Australia, metropolitan of New South Wales, bishop of Sydney, 1884-89; canon of Windsor, 1891; assistant bishop in W. London, 1897; rector of St. James's, Piccadilly, 1895-1900. Publications include: *Boyle Lectures*, 1876, 1877, 1878; *Life of Sir Charles Barry* (his father, q.v.), 1867; *Introduction to the Old Testament*; *Christianity and Socialism*, 1891; *Position of the Laity*, 1903; *The Christian Sunday*, 1904.

Barry, Sir Charles (1795-1860), Eng. architect, b. in Westminster, London. After serving his apprenticeship with a firm of Lambeth architects he travelled in Greece, Italy, Egypt, and Palestine. He started practice in London in 1820. His first important work was St. Peter's Church at Brighton. Subsequent notable designs were the Athenæum at Manchester, Halifax town hall, King Edward's Grammar School at Birmingham, and the Travellers' and Reform clubs in London. In 1835 B. was successful in the competition for the design for the new Houses of Parliament, and was knighted

by Queen Victoria at the opening of the Victoria Tower and Royal Gallery in 1852. He was elected R.A. in 1841, was a fellow of the Royal Society, and member of many foreign academies. He was buried in Westminster Abbey. See *Life* by his son, Bishop Barry, 1867.

Barry, Elizabeth (1658-1713), Eng. actress. She is said to have been the daughter of Edward B., a barrister, and to have been patronised by Lady Davenant, but there is no certain foundation for these stories. She was introduced to the stage by the earl of Rochester, making her first appearance in 1673 as Isabella, queen of Hungary, in the earl of Orrery's tragedy *Mustapha*. Though she showed no talent whatever on her first appearance, she was later universally considered to be one of the finest actresses of the time, and created over 100 roles. Her life was as immoral as her talent was great.

Barry, James (1741-1806), Irish painter, b. at Cork, the son of a coasting trader; made progress as a youth, and at 22 went to Dublin. Here he was introduced to Edmund Burke, who brought him to London, and soon sent him to Rome, where he remained 5 years. He returned to England, 1770, where in 1772 he proposed to the Royal Academy to decorate St. Paul's with historical pictures. The Royal Academy made the proposal to the chapter, but it was rejected. In 1775 he pub., in answer to Du Bos and Winckelmann, an *Inquiry into the Real and Imaginary Obstructions to the Acquisition of the Arts in England*. He painted 6 pictures for the Society for the Encouragement of Arts, etc. His most famous picture is that of the 'Victors at Olympia'. Canova said that this was sufficient to bring him to England. A.R.A., 1772; R.A., 1773. He was elected prof. of painting at the Royal Academy, but his quarrelsome spirit made him unpopular, and he was expelled (1799).

Barry, Sir John Wolfe Wolfe- (1836-1918), Eng. engineer, son of Sir Charles B., b. in London; educated at Glenalmond, King's College, London, and Trinity College. While under Hawkshaw, B. was engaged as resident engineer during construction of bridges over Thames, and of stations at Charing Cross and Cannon Street. Later he built Blackfriars, Kew, and Tower Bridges; carried out Earl's Court, Ealing, and Fulham extensions of Metropolitan Dist. railway; constructed B. Dock near Cardiff (largest in Great Britain), and other engineering works in various parts. B. visited the Argentine, 1872, and planned railway from Buenos Aires to Rosario. Consulting engineer on underground railways of Glasgow; 1903-5 royal commissioner of London traffic. Publications: *Railway Appliances* (Text-books of Science), 1876; *Lectures on Railways and Locomotives*, 1882; *The Tower Bridge*, 1894. Was consulting engineer to many railway companies. Died Jan. 22, 1918.

Barry, Lodowick, Eng. author, the author of a comedy called *Ram-Alley, or Merry Tricks*, first printed in 1611 and reprinted in Dodsley's *Old Plays*. For liveliness of

incident and spirit and humour in dialogue and character it is one of the best of the old Eng. dramas. Little is known with certainty about the author, but his first name is properly Lording, which was his mother's surname.

Barry, Comtesse du, see DU BARRY, MARIE.

Barry, Martin (1802-55), Eng. physician, studied in Edinburgh, Paris, Germany (under Tiedemann), and London. Special study, embryology; 1839 contributed 2 papers on the subject to *Philosophical Transactions*. In 1843 B. gave physiological lectures at St. Thomas's Hospital.

Barry, Sir Redmond (1813-80), Australian judge, educated at Trinity College, Dublin; barrister 1838. In 1839 went to Sydney; becoming shortly commissioner of court of requests in Melbourne, 1850, on formation of colony of Victoria, B. was solicitor-general; in 1851 became judge; 1855 first chancellor of Melbourne Univ.; knighted 1860; visited England 1862. He founded Melbourne Public Library and National Gallery.

Barry, Spranger (1719-77), Irish actor, b. in Dublin; son of a silversmith. He mismanaged his father's business so badly that he became bankrupt, and adopted the profession of an actor. His first appearance was made at the Theatre Royal, Dublin, on Feb. 15, 1744. He played for a time under Garrick, but in 1749 left Drury Lane for Covent Garden, and both houses played *Romeo and Juliet* in rivalry of each other simultaneously. B.'s performance of *Romeo* was considered by many to surpass that of Garrick. B. crossed to Ireland after a time, and opened theatres in Dublin and Cork, but returned to work with Garrick in 1767. He again went to Covent Garden, however, in 1774, where he played till his death. He had no tact, and was ignorant and lacking in judgment, but was nevertheless a great actor.

Barry Cornwall, see PROCTER.

Barry Railway Viaduct, across Taff R., Glamorganshire, Wales; spans 2 other railway lines and a canal. Length 1420 ft., height 112 ft.

Barrymore, John (1882-1942), Amer. actor, of a distinguished theatrical family, his real name being Blythe. He first appeared, in Chicago, in *Magda*, 1903, and 2 years later made appearance in London in *The Dictator*. He scored a success as Hamlet, in U.S.A., in 1923, and in London in 1925. He also acted for the films, a notable success being his performance in the double role in the film of Stevenson's *Dr. Jekyll and Mr. Hyde*. In talking films his best parts were in *Arsène Lupin*, *Moby Dick*, *Romeo and Juliet*, and *Svengali*. His autobiography *Confessions of an Actor* was pub. in 1926. See also biography by Alma P. Waters, 1942. His brother and sister, Lionel and Ethel Barrymore, also became leading Amer. actors, his sister, in 1928, opening the Ethel Barrymore Theatre in New York.

Bars, N.W. co. of Hungary, the cap. of which is Aranyos Marót. It contains the

2 small adjoining tns. of Ò Bars (Old Bars) and Uj Bars (New Bars), which are situated 57 m. to the N.N.W. of Budapest.

Barsi, or **Bursi**, tn. in the Sholapur dist. of Bengal, which is noted for its cotton. Pop. 18,000.

Barsine: 1. Also called Statira, the daughter of Darius Codomannus and the wife of Alexander the Great. After the death of Alexander, she was put to death through the instigation of Roxana, who feared that B. might give birth to a son, whose claims would clash with those of her own. (2) Daughter of Artabazus, satrap of Bithynia, and wife of Memnon, a Rhodian. At the fall of Damascus, 333 B.C., she fell into the hands of Alexander the Great, and became the mother of his son Hercules. She and her son were afterwards murdered by Polysperchon, by the order of Cassandra.

Bars Khotan, see **BARAS KHOTUN**.

Barstow, Emmuska, see **ORCZY, BARONESS**.

Bar-sur-Aube, tn. in the dept. of Aube, France, on the riv. of the same name. Manufs. brandy, wool, and cotton; exports grain and wine. Originally a Rom. fortress, destroyed by the Huns. Pop. 4000.

Bar-sur-Seine, tn. in the dept. of Aube, France, 19 m. S.E. of Troyes, situated on the l. b. of the Seine. In the Middle Ages it was a tn. of note. Pop. 3000.

Bart, Jean (1650-1702). Fr. naval officer, b. at Dunkirk, as a boy served under Admiral de Ruyter. Was in command of a frigate of the Fr. Navy against the Sp. in the Mediterranean Sea. In the war with England he was captured and taken to Plymouth; he escaped, however, and was made a captain by the Fr. king. In 1690 he took command of a 40-gun ship and helped Admiral de Tourville against the combined Eng. and Dutch fleets; he obtained command next year of a squadron that went up the North Sea and landed on the coast of Scotland, plundering sev. vils.; made an attack on Newcastle after the Fr. defeat at La Hogue. Retired after peace of Ryswick in 1697.

Bartan-Su, or **Bartine**, River, the anct. Parthenius (q.v.).

Bartas, Guillaume de Saluste Du, see **DU BARTAS**.

Bartenstein, tn. of the former E. Prussia, 34 m. S.S.E. of Königsberg (Kalinigrad), on the R. Alle. It is now incorporated in Lithuania. Pop. 10,000.

Barter, system of trading by the exchange of one commodity for another, as distinguished from the sale of commodities for money. It is the common method of exchange amongst primitive peoples, and is a phase in the economic hist. of all races. In civilised countries the custom became practically extinct with the establishment of the money currency. In law, B., or exchange, is a contract for the exchange of 2 commodities.

Bartheid, see **BARDEJOV**.

Barth, seaport of Pomerania, Germany, on the Hinnensee at the mouth of the B., 17 m. N.W. of Stralsund. The chief

industries are shipbuilding, brewing, and fish-curing. There is a thirteenth-century church. Pop. 8000.

Barth, Heinrich (1821-65), Ger. explorer, b. in Hamburg. After studying at the univ. of Berlin, he made his first expedition to Africa, visiting Tunis, Tripoli, and travelling down the valley of the Nile. In 1847 he again travelled in Egypt and the Near E. An account of these journeyings was given in his *Wanderungen durch die Küstenländer des Mittelmeeres* (1849). From 1849 to 1855 he was engaged with the Brit. expedition of exploration in Central Africa. His experiences during these years he described in his *Reisen und Entdeckungen in Nord- und Zentralafrika* (1849-58; Eng. translation, new ed., 1890). In 1863 he became prof. of geography at the univ. of Berlin. His collection of Central African vocabularies (1862-64) is of great value.

Barth, Karl (b. 1866), Ger. theologian. The leader and prophet of the New Reformation thought. B. has changed the whole outlook of Protestant theology on the Continent, where the reformed churches have acclaimed his message as an inspiration to renewed vigour. In the Ger. youth movement his chief work up to the present is *The Word of God and the Word of Man* (trans. by D. Horton, 1930). In this we learn that B., disillusioned alike of the redemptive influence of Socialism and of the ineffectiveness of evolutionary progress, and indeed of all human effort, abjures all religious systems which take man as their centre; or, in other words, the only hope for religion is that man should get back to God. In the language of theology, B. opposes to the familiar anthropocentric theology one that is theocentric, and against the immanence of God he sets His transcendence. In the place of a subjective faith based on experience which makes God little more than the projection of human hopes and desires, B. urges a surrender to a transcendent divine event. B.'s other works include a commentary on the Epistle to the Romans, and a work on dogmatics. See R. D. Hoyle, *The Teaching of Karl Barth*, 1930; J. McConachie, *The Significance of Karl Barth*, 1931.

Barthélemy, Auguste Marseille (1796-1867), Fr. writer of political verse, b. at Marseilles. After completing his education at the Jesuit College of Juilly, he went to Paris in 1822. Here he wrote a series of brilliant satires against the Bourbons. In 1826 was pub. his mock-heroic poem, *Le Villéiade*, written in collaboration with his friend Méry. This was an enormous success, as was also his *Napoléon en Égypte* (1828). The imperialistic sentiments of *Le Fils de l'homme* (1829) brought about his imprisonment, from which he was released by the revolution of 1830. This event he celebrated, with Méry, in *L'Insurrection* (1830). From 1832 his popularity declined, owing to his support of gov. measures distasteful to the Liberal party. His changes of front he attempted to justify in his phrase, 'L'homme absurde est celui qui ne change jamais.'

Barthélemy, Jean Jacques (1716-95), Fr. writer and antiquarian, b. at Cassis, in Provence. In early life he was educated for the Church, and spent much time in the study of Gk. and oriental languages, and antiquities, especially numismatics. In 1745 he became an assistant in the royal cabinet of medals, and in 1753 was appointed its director. He received a state pension which enabled him to carry on his research work, but the Revolution deprived him of office in 1789. He was denounced as an aristocrat in 1793, but was released. Citizen Paré, the *pro tempore* minister of the interior, offered him the place of chief librarian of the Royal, now National, Library, which he refused on account of his age. His best-known work is the *Voyage du jeune Anacharsis en Grèce* (4 vols, 1788), which has been trans. into many languages, the Eng. ed. being ed. by W. Beaumont (5th ed., 6 vols., 1817). A complete ed. of his works was brought out in 4 vols. with a biography in 1821.

Barthélemy Saint-Hilaire, Jules (1805-1895), Fr. politician and savant, friend and literary executor of Thiers, b. in Paris. After occupying a minor position in the ministry of finance, he became in 1838 prof. of Gk. and Rom. philosophy at the Collège de France. The revolution of 1848 again brought him into politics as a member of the Assembly. On the occasion of the *coup d'état* he was one of the patriots who suffered imprisonment. After his release he vacated his professorship and devoted himself to oriental studies. As a member of the Bordeaux Assembly, to which he was elected in 1871, he supported Thiers, and for some time acted as his secretary. In Jules Ferry's Cabinet of 1880-81 he was foreign minister. His chief works are his translations of Aristotle (1839-44), *Sur les Védas*, 1854; *Du Bouddhisme*, 1855; *Le Bouddha et sa religion*, 1866; *La Philosophie dans ses rapports avec les sciences et la religion*, 1889; and *François Bacon*, 1890. He also made a verse translation of the *Iliad*.

Barthez, Paul Joseph (1734-1806), Fr. physician, b. at Montpellier. Here he studied medicine and obtained his doctor's degree at the early age of 19. In 1756 he was employed as a physician to the army, but soon returned to Paris to edit in part the *Journal des savants* and the *Encyclopédie méthodique*. In 1759 he was appointed prof. at Montpellier, and became chancellor of the univ. in 1785. His chief work, *Nouveaux Éléments de la Science de l'homme* (1778), expounds his doctrine of vitalism. Amongst his other works are: *Oratio de Principio Vitali Hominis*, 1773; *Nova Doctrina de Functionibus Corporis Humani*, 1774; *Nouvelle Mécanique des mouvements de l'homme et des animaux*, 1798; and *Traitement des maladies goutteuses*, 1802. Appointed physician to Napoleon, 1802. Died of fever. Pub. posthumously, *Traité du beau*, 1807; *Consultations de la médecine*, 1810.

Barthold, Friedrich Wilhelm (1799-1858), Ger. historian, b. in Berlin. He studied at the univs. of Berlin and

Breslau, and in 1831 was appointed prof. of hist. at Griefswald. His chief publications are *Geschichte von Rügen und Pommern*, 1839-45, and *Geschichte der Deutschen Städte und des Deutschen Bürgertums*, 1850-52.

Bartholdi, Frédéric Auguste (1834-1904), sculptor, was b. at Colmar, Alsace, his father being of It. descent. His famous work is the Liberty statue ('Liberty enlightening the World') on Bedloe's Is., New York, commissioned by the Fr. Gov. and presented to the American nation to commemorate the centenary of its independence. This huge figure, 220 ft. high, was unveiled in 1886. Amongst B.'s other well-known works are the Lafayette statue, New York, 'The Lion of Belfort,' the monument to Vereiniger-Oriox, the Gaulish leader, and 'Grief.'

Bartholine, or Bartholin, Thomas (1616-1680), Dan. physician, son of Kaspar. He visited the most celebrated schools of Europe. In 1637 he went to Leyden, where he republished his father's *Institutiones Anatomicae*, with additions, in 1641. He also visited Paris, Montpellier, Padua, Malta, and Basle, where he took the degree of doctor of medicine, having chosen for his thesis *De Phrenitide*, 1646. In 1647 he was appointed prof. of mathematics in the univ. of Copenhagen, which in 1648 he exchanged for the chair of anatomy, which he held till 1661. In 1670 he was appointed physician to the king, and became librarian for the univ.; afterwards, in 1675, the king appointed him a member of the grand council of Denmark. He pub. numerous works on medical subjects, and was an ardent supporter of Harvey's doctrine of the circulation of the blood. See Muller's *Bibliotheca Medica*, 1776-78, and *Bibliotheca Anatomica*, 1774-77.

Bartholine, or Bartholin, Thomas (1659-1690), Dan. jurist, son of Thomas B. Studied at the univs. of Copenhagen, Leyden, Paris, Leipzig, and Oxford. Appointed prof. of hist. and civil law at Copenhagen, and held the offices of assessor of the consistory, secretary to the king, antiquary and keeper of the royal archives. His chief work is *Antiquitatum Danicarum Libri Tres*, 1689.

Bartholinus, Kaspar (1585-1629), Dan. scholar, b. at Malmö, Sweden, and d. at Copenhagen. He became prof. of rhetoric in the univ. of Copenhagen in 1611, of medicine in 1615, and of theology in 1624. His text-book, *Institutiones Anatomicae*, 1611, was trans. into Eng., Fr., and Ger., and was used throughout Europe during the seventeenth century.

Bartholomé, Paul Albert (1848-1928), Fr. painter and sculptor, b. at Thiverval, Seine-et-Oise. He studied in Geneva and later entered the studio of Léon Gérôme in Paris. He exhibited *genre* pictures at the Salon from 1879 to 1886, his best being 'Souper de vieillards,' 1808; 'Les Derniers Épis'; 'L'Aïeule coupant du pain pour ses petits enfants.' From 1891 he exhibited sculptures at the Salon. 'Aux morts,' 1899, now placed in the Père Lachaise cemetery, is one of his

finest pieces of sculpture. Largely self-taught, B. followed the classical and not the impressionist school. Among his later pieces may be mentioned 'Paris, 1914-18,' and a memorial to J. J. Rousseau in the Panthéon. He designed the Croix de Guerre and was elected president of the Société Nationale des Beaux-arts.

Bartholomew, Edward Sheffield (1825-1888), Amer. sculptor. He was b. in Connecticut, and became, in succession, a dentist, painter, and sculptor. He was director of the Wadsworth Gallery at Hartford, where there is a large collection of his works. He studied art in New York, and then lived in Italy till his death, at Naples. His best-known statues are, 'Youth and Age,' 'Sappho,' 'Ganymede and the Eagle,' and 'Eve Repentant.'

Bartholomew, Massacre of St., the name given to the massacre of Huguenots which commenced in Paris on St. Bartholomew's Day, Aug. 24, 1572, and spread through the provs. during the succeeding weeks. The total number of those killed has been estimated at figures varying from 5000 to 70,000. In Paris alone 1100 perished. The outrage owed its inception to the cruelty and cunning of Catherine de' Medici, who, as regent for her son Charles IX., after provoking the 8 years' conflict between the Catholics under the duke of Guise and the Protestants under the prince of Condé, during which both leaders lost their lives, lured the Huguenots into a sense of security by marrying her daughter Margaret to the Protestant Henry of Béarn (afterwards Henry IV.). She then worked upon the king's feelings in such wise as to convince him that Admiral Coligny, the Huguenot leader, had designs upon his life, and in a fit of passion he gave orders that Coligny should be killed and all the Huguenots with him. Catherine summoned a council, and St. Bartholomew's Day was appointed for the massacre. Coligny was enticed to Paris and murdered. His death was the signal for an orgy of slaughter. Prince Henry and the prince of Condé only saved their lives by pretended conversion to the Catholic religion. The pope celebrated the event by striking a special medal, proclaiming a year of jubilee, and other ceremonies. Rom. Catholic historians take a different view of the origin and causes of the massacre. They aver that only a few over-zealous Protestant historians claim that the Holy See was the accomplice of the Fr. court. It may be that the idea of the summary execution of the Protestant leaders, as a means of ending the civil discord which had provoked 3 religious wars in France, had long been nurtured in the mind of Catherine de' Medici. Catholics claim that the general opinion throughout France was that the king was compelled to kill Coligny and other turbulent persons in mere self-defence, especially as Coligny was trying to drag Charles IX. into a war with Spain. According to this view the massacre was entirely political and not the result of religious disturbances nor even due to religious incentives. But whether or no Catholic historians can sustain the posi-

tion that the massacre was committed in the name of the corrupt principles of Machiavellianism against a faction that was anathema to the court, there would appear to be some evidence that the Holy See looked on the Huguenots as mere rebels who weakened and divided France just at a time when Christianity needed all her strength to deliver a really effective blow against the infidel Turks; and that what Pius V. championed was an open and honest war waged by Charles IX. and the Guises against the Huguenots. In any case the majority of historians now deny that the massacre was premeditated. See White's *Massacre of St. Bartholomew*, 1867, and Acton's essay in his *History of Freedom*, 1907.

Bartholomew, St., one of the 12 apostles, commonly identified with Nathanael, was b. at Cana in Galilee, and introduced to Jesus by Philip. After the Crucifixion he is stated by various untrustworthy authorities to have preached in India, Armenia, and Asia Minor. According to tradition he was flayed alive and crucified at Albanopolis in Armenia, or Urbanopolis in Cilicia. His festival is celebrated on Aug. 24.

Bartholomew Anglicus, see GLANVILLE, BARTHOLOMEUS DE.

Bartholomew Fair was held annually in W. Smithfield, London, from 1133 till 1840 on St. Bartholomew's Day (Aug. 24, old style). It was at one time the chief cloth fair in the country, and an important market for cattle, pewter, and leather. A great feature of the fair was the large number of exhibitions, shows, performers of all descriptions, quack doctors, etc., which combined to make it one of the most widely popular affairs of its kind. After 1840 the exhibitions were held at Islington. It was proclaimed by the lord mayor for the last time in 1850 and abolished as a nuisance in 1855. See Morley's *Memoirs of Bartholomew Fair*, 1859.

Bartholomew's (St.) Hospital ('Bart.'s), Smithfield, London, was founded in 1123 by Rahere, a minstrel and favourite of Henry I., who was also prior and founder of the adjoining priory of the Augustinian Canons, in the church of which, St. Bartholomew the Great, his magnificent tomb is still to be seen. Within the grounds of the hospital is the auct. church of St. Bartholomew the Less. The priory and hospital were dissolved at the Reformation, but Henry VIII. refounded the latter in 1547. Rebuilt in 1730-66, it was extended in 1881 by the new buildings for the medical school, and from 1905 onwards by other considerable additions. Attached to it is a convalescent home at Swanley, Kent. The hospital contains paintings by Hogarth, Kneller, Reynolds, Lawrence, and Millais. Among the profs. of the medical school have been Harvey, Richard Owen, and Abernethy. The hospital suffered damage during air raids in the Second World War. On Sept. 9, 1940, a high-explosive bomb struck the basement and ground floor of the nurses' home in Little Britain, and later in the same month a bomb hit the hospital in

the part containing the anatomical lecture theatre.

Barthou, Jean Louis (1862-1934), Fr. statesman, b. Aug. 25. After practising law, he entered politics in 1889, being appointed deputy for the dept. of Basses-Pyrénées. From 1894 he held a succession of ministerial posts until he became premier in Mar. 1913. His Gov. lasted until Dec. of the same year, and B. served as minister without portfolio in Painlevé's Gov. during the First World War. After the war he was a protagonist of the policy to maintain vigorously all Fr. claims and guarantees as recognised in the peace treaties. From 1922 to 1926 he was president of the reparations commission, and then became minister of justice in Poincaré's Gov. of 1926. He later served under Briand, and was foreign minister in 1934 when, on Oct. 9, he was assassinated at Marseilles while in the company of King Alexander I. of Yugoslavia, who was also murdered. B. was the author of sev. books, including *L'Action syndicale* (1904), *Mirabeau* (1913), and *Lamartine Orateur* (1919).

Bartine, see **PARTHENIUS**.

Bartin, River, see **BARTAN**.

Bartizan, in architecture, small, overhanging turret, projecting from the angle at the top of a tower or from a parapet of a building; more commonly seen on castles on the Continent than in the United Kingdom.

Bartlett, Sir Ellis Ashmead (1849-1902), Amer.-Eng. politician, b. in Brooklyn, New York. He graduated at Christ Church, Oxford, in 1872. M.P. for Eye, 1880-84; for Ecclelland div., Sheffield, 1885-1902. He became civil lord of the Admiralty in 1885. He was a strong anti-Russian, and an enthusiastic supporter of Turkey. He fought for the sultan against Greece in 1897, and was taken prisoner by the enemy. He also served in 1899 when the Boer war broke out. Author of *The Battlefields of Thessaly* (1897).

Bartlett, John (1820-1905), Amer. publisher and compiler, b. at Plymouth, Massachusetts; was a bookseller and publisher in Cambridge, Massachusetts. In 1855 he pub. *Familiar Quotations*, and in 1894 a concordance to Shakespeare, much fuller than any previously pub.

Bartlett, John Russell (1805-86), Amer. author and antiquarian. He was appointed on the commission to determine the boundary line between the U.S. and Mexico (1850-54); and was secretary of state for Rhode Is. from 1855 to 1872. He wrote *The Progress of Ethnology*, 1847; *A Dictionary of Americanisms*, 1850; *Literature of the Rebellion*, 1866; *Primeval Man*, 1868. His bibliographical works include *Records of the Colony of Rhode Island and the Providence Plantations* (10 vols., 1856-65).

Bartlett, Paul Wayland (1865-1925), Amer. sculptor, b. at New Haven; educated there and at Boston. He began sculpture under Frémiet, and at the age of 14 exhibited at the Salon. In 1880 he entered the École des Beaux-arts, and he represented U.S.A. on the international jury of awards for sculpture at the Paris

Exposition of 1900. A chevalier of the Legion of Honour, 1895, he became an officer, 1908, and a commander, 1925. Among his most noted works are statues of Michelangelo, Columbus, and Benjamin Franklin, and one of Lafayette in the square of the Louvre; the pediment over the House wing of the Capitol at Washington, and 6 figures in front of the N.Y. public library.

Bartlett, Vernon, Eng. journalist, b. Westbury, Wilts, Apr. 30, 1894; educated Blundell's School, Tiverton. After service in the army 1914-16, he was successively on the staff of the *Daily Mail*, Reuters, and *The Times*, being foreign correspondent for the latter in Germany, Poland, and Italy, 1919-22. He joined the staff of the *News Chronicle* in 1934, and in 1938 entered Parliament as M.P. for Bridgwater. While being independent of party, his sympathies are Liberal. He broadcast regularly on foreign affairs from 1928-34, and again to listeners in the Empire and the U.S.A. during the Second World War. He has pub. a number of books, notably *Behind the Scenes of the Peace Conference*, 1919; *The World—Our Neighbour*, 1931; *Nazi Germany Explained*, 1933; *This is My Life*, 1938; *To-morrow Always Comes*, 1943; and *Go East, Old Man*, 1948.

Bartlett, William Henry (1809-54), Eng. artist, b. in London. He was apprenticed, as an architect, to John Britton. His sketches were almost entirely topographical. He provided the illustrations to Britton's *Cathedral Antiquities of England*, 1814-35; and illustrated *American Scenery* 1840; and *Canadian Scenery*, 1842, by N. P. Willis, after having travelled extensively in N. America. He wrote sev. works on Palestine and Egypt.

Bartók, Béla (1881-1945), Hungarian composer and pianist, b. at Nagyszentmiklós, Rumania (formerly in Hungary). By 1904 he had produced sev. works, including songs and piano pieces, all of which showed the influence of Strauss. These early themes bear the obvious impress of Hungarian popular melodies, and his *Kossuth* symphony of 1903 indicates the influence on B. of a strong contemporary national movement. This basis, however, was less suited to a national style in music than the much older peasant music and folk-songs, and B., who had been teacher at the Budapest Musical Academy since 1907, set out to search for old traditional melodies. His style soon showed the effect of this archaic music, which is mostly modal and rhythmic. But whereas his earlier work had met with unqualified success, this later work earned the appreciation only of a limited circle. Of this period are his *Deux Images* (1910), *Nénies* (1910), and the opera *Duke Bluebeard's Castle*. Discouraged, he withdrew from public life to devote himself to folk-lore studies and travel, returning with a large collection of Arab peasant music. Now his work became more individual and subjective, and there was a change in popular favour. His pantomime, *The Wooden Prince* (1917) brought him recognition, and the new

generation received his subsequent works with enthusiasm. After that date he exploited a new and rather perplexing expressionist style, e.g. in the piano sonata (1927), the second violin sonata, and the second string quartet. His compositions are fairly numerous and include (in addition to stage works) orchestral suites and other orchestral music, some choral music—e.g. *Cantata Profana*—sev. string quartets and violin sonatas, many piano compositions (including concertos), besides many vols. of arrangements of folk-songs. Also pub. *Hungarian Folk Music* (Eng. trans. by M. D. Calvocoressi, 1931).

Bartoli, Adolfo (1833-94), lt. author, b. at Fivizzano. He was associated in the editorial management of *Archivio storico Italiano*, 1856-59; director of the naval academies at Leghorn, Piacenza, and Venice; and prof. of literary hist. in the Istituto di Studi Superiori of Florence, 1874-94. He pub., among other works, a critical hist. of lt. literature down to the fourteenth century, *Storia della Letteratura Italiana* (8 vols.), 1878-89.

Bartoli, Daniello (1608-85), lt. Jesuit, b. at Ferrara, and d. at Rome. He entered the order of the Jesuits at the age of 15. He was commissioned by the father-general to write a hist. of the order, and it is for his *Istoria della Compagnia di Gesù* that B. is chiefly remembered. He was appointed rector of the Gregorian or Rom. College in 1671. A complete ed. of his numerous works appeared at Turin in 34 vols. (1823-44).

Bartoli, Pietro Santi (1635-1700), lt. painter and engraver, b. at Perugia. As an engraver he obtained a great reputation, more, however, from the subjects and the number of his prints than for any particular excellence of execution. He studied painting under P. Le Maire and under Nicolas Poussin, from whom he probably derived his great love of the works of anc. art. As a painter he did little beyond copying, in which he was so proficient that even Poussin himself had difficulty in distinguishing between his own pictures and the copies made of them by B.

Bartoli, Taddeo, or Taddeo di Bartolo (c. 1363-c. 1436), early lt. painter, b. at Siena. He was one of the greatest of artists in the period which preceded the Renaissance, and his chief care was expended on frescoes. Some of his best work, dating from 1414, is to be found in the municipal palace of Siena, and in the cathedrals of Pisa, Perugia, and Genoa. His favourite subject was the life of the Virgin, and one of his earliest works, 'The Virgin among the Saints,' 1390, is in the Louvre.

Bartolini, Lorenzo (1777-1850), lt. sculptor, b. at Vornò, near Florence. After acquiring considerable reputation as a modeller in alabaster, he went to Paris in 1797, where he studied painting under Desmarests and sculpture under Lenoir. His bas-relief of 'Cleobis and Biton,' 1803, gained the second prize of the Academy. After the fall of Napoleon, who had been his great patron, he retired to Florence, where he d. Amongst his best works are: 'Charity,' 'Pyrrhus hurl-

ing Astyanax from the Walls of Troy,' 'Hercules and Lichas,' and 'Faith in God.'

Bartolommeo di Pagholo del Fattorino, Fra (1475-1517), also known as **Baccio della Porta**. Florentine painter, b. at Savignano, near Florence, by the gate of San Piero Gattolino, hence his name 'della Porta.' He entered the studio of Cosimo Rosselli, where he came into contact with Piero di Cosimo and Albertinelli. He became a follower of Savonarola, and on the reformer's death renounced his profession and in 1500 joined the Dominicans at San Marco. However, he continued to paint in his convent, and about 1504 painted the picture in the Florentine Academy, 'Apparition of the Virgin to Saint Bernard.' In 1506 Raphael on a visit to Florence made the acquaintance of B., and the 2 artists influenced each other's work. B. also learnt much from Leonardo da Vinci, and later from Michelangelo. He was associated with his friend Albertinelli in many of his pictures; the fresco of the 'Last Judgment' (Santa Maria Nuova), 1498, was finished in the lower part by Albertinelli; and the 'Madonna and Saints' in the Pitti and the 'Assumption' in Berlin are among their joint productions. Some of his finest work is at Lucca, including the beautiful 'Madonna della Misericordia,' 1515; of his other well-known pictures, only a few can be mentioned: the 'Marriage of Saint Catharine' (in the Louvre), 'Saint Mark' (Pitti), and 'Saint Sebastian.' B. excelled particularly in draperies and in symmetry of composition. He is said to have been the first to use the lay figure. Consult the biographies of Leader Scott, 1880, and Gruyer (Paris, 1886), and Vasari's *Lives of Italian Painters*, 1895.

Bartolommeo, Veneto, or Veneziano Bartolommeo (d. 1461), lt. painter, b. in the early part of the 15th century. His works have scarcely anything in common with the Venetian school, though he signs himself a Venetian. Spent early years of his life in Florence and Perugia and appears to have been employed by the Medici family. He worked on the decorations of the Portinari Chapel in Santa Maria Novella, Florence, 1439-44, and is said to have used limbed oil as his medium. His paintings include an enthroned Virgin and Child with St. John the Baptist, St. Francis, and other saints. He d. at Florence May 15, sev. years after the death of Andrea del Castagno, whom Vasari erroneously accuses of having been his murderer. But few of his paintings are in existence, the most important being the enthroned Madonna in the National Gallery. Others ascribe to him frescoes of St. Francis and John the Baptist in the church of Santa Croce, Florence.

Bartolozzi, Francesco (1725-1815), lt. engraver, was a native of Florence. He was originally intended for his father's profession of silversmith, but his artistic bent led to his being instructed in painting. He studied engraving at Venice under Joseph Wagner. For a short time he lived in Rome, where he engraved a fine

set of plates from the life of St. Vitus. In 1764 he settled in England under the patronage of George III. He was one of the original members of the R.A., and executed for them, from Cipriani's design, the diploma which is still used. In 1802, at the invitation of the prince regent of Portugal, he became superintendent of an engraving school at Lisbon, where he d. Amongst his best works are 'The Silence' and 'Clytie,' after Annibale Carracci, and 'Venus, Cupid, and Satyr,' after L. Giordano. The famous actress, Madame Vestris, was his grand-daughter. See Tuer's *Bartolozzi and his Works*, second ed., 1885, and Baily's *Francesco Bartolozzi*, 1907.

Bartolozzi, Lucia Elizabeth, see VESTRIS.
Bartolus (1314-57), It. jurist. b. at Sassoferato. Studied civil law at Bologna and Perugia; was a doctor of civil law at the former, and a prof. at the latter univ. He had a rare knowledge of the jurisprudence of the imperial period of anc. Rome and his commentaries on Justinian's *Digest* are authoritative. Also wrote treatises on evidence and procedure.

Barton, vil. of the Isle of Wight, England, which gives its name to the formation known as the Barton Beds or Barton Clay (*q.v.*), the clays being well exposed here.

Barton, Andrew, Scottish naval commander and the hero of a popular ballad, was killed in a fight with 2 Eng. ships in 1511. Many of his operations savoured of piracy.

Barton, Benjamin Smith (1766-1815), Amer. naturalist and doctor, b. at Lancaster, Pennsylvania. He studied medicine and the natural sciences in Philadelphia, Edinburgh, and London from 1782 to 1788, and graduated at Göttingen. On his return to America he worked up a practice in Philadelphia, and in 1790 became prof. of natural hist. and botany in the college there, and thus was the earliest teacher of natural science in N. America. In 1802 he was elected vice-president of the Amer. Philosophical Society, and in 1809 president of the Philadelphia Medical Society. His works include *Elements of Botany*, 1812-14; *Collections for an Essay toward a Materia Medica of the United States*, 3rd ed., 1810; and *Flora Virginica*, 1812.

Barton, Bernard (1784-1849), Eng. poet, commonly known as the Quaker poet b. at Carlisle. For the greater part of his life he was a bank clerk at Woodbridge in Suffolk. He was the author of *Metrical Effusions*, 1812; *Poems by an Amateur*, 1818; and *Poems*, 1820. These works are distinguished by piety and pathos. He was a friend of Charles Lamb. See his *Poems and Letters*, 1849; new ed., 1853, with a memoir by Edward FitzGerald.

Barton, Clara (1821-1912), Amer. philanthropist, b. at Oxford, Massachusetts. During the Amer. Civil war she did relief work on battlefields and organised at her own expense the search for missing men. In the Franco-Ger. war of 1870, she associated herself with the International Red Cross of Geneva, since when she represented the U.S.A. at

many international conferences, and in 1898 did personal field work at Cuba and in the Anglo-Boer war of 1899-1902. She d. at Washington, D.C. Her publications include a *History of the Red Cross*, 1882; *History of the Red Cross in Peace and War*, 1898; *A Story of the Red Cross*, 1904; and *Story of my Childhood*, 1907. See C. Bacon-Foster, *Clara Barton* (Washington), 1918.

Barton, Sir Edmund (1849-1920), Australian statesman. He was b. at Glebe, near Sydney, New South Wales; called to the Bar in 1871. He was a leading figure in the legislative council and assembly, and Speaker 1883-87; attorney-general, 1889-91. He became leader of the Federation movement on the retirement of Sir Henry Parker in 1891, and founded (July 1893) the Sydney Federation League. Conference of Australian premiers at Hobart in Feb. 1895 resulted. The Federal Convention at Adelaide, 1897, appointed B. leader. In 1900 he was in England to watch the passage of the Commonwealth Bill through the Imperial Parliament; and he was first Commonwealth Prime Minister, 1901-3. In 1903 he retired and became senior puisne judge of the Federal High Court. He d. at Mellow, Blue Mountains, N.S.W., Jan. 6, 1920.

Barton, Elizabeth, commonly called the holy maid of Kent, was b. about the year 1506. She served at an inn in Aldington. After a severe illness in 1525 she became subject to hysterical ravings and fell into a state of religious mania. Archbishop Warham sent 2 monks to examine her, and one of these, Edward Bocking, or Bocking, was quick to see that she might be used as an instrument for reviving popular belief in the Catholic Church. He instructed her in the points at issue between his Church and Protestantism, and in the legends of the saints, and personally directed her prophesying to his own ends. In 1527 she became a nun at the priory of St. Sepulchre at Canterbury. In 1532 she opposed Henry VIII's intention to divorce Catherine and predicted his death within 7 months of his marriage with Anne Boleyn. The non-fulfilment of this prophecy brought about a loss of popular confidence; she was arrested and confessed that 'all that she ever said was feigned of her own imagination only, to satisfy the minds of those which resorted to her and to obtain worldly praise.' In 1534 she was executed at Tyburn, with Bocking and other accomplices, on a charge of high treason. See Burnet, *History of the Reformation in England*, 1737.

Barton, Sir Geoffrey (1844-1922), Brit. soldier. He entered the army in 1862; served with distinction in the Ashanti war, 1873-74, and in the Zulu war, 1879. He also went to Egypt (1882) with an expeditionary force, and was present at Kassassin and Tel-el-Kebir; and was again called to the front during the Boer war (1899-1902). He was wounded at Ladysmith and commanded the Krugersdorp dist. till 1902.

Barton, William Eleazar (1861-1930), Amer. theologian and clergyman, b. Illinois. Associate editor of the *Bibliotheca Sacra*, and, later, of the *Congregationalist*. Lectured on applied practical theology and ecclesiastical law. Among his works are *Life in the Hills of Kentucky*, 1889; *The Old World in the New Century*, 1902; *The History and Religion of the Samaritans*, 1906; *The Law of Congregational Usage*, 1915; *Congregational Creeds and Covenants*, 1917; *Safed and Kenturah*, 1921; *Immortality*, 1926.

Barton Clay, a name given to some beds of the Eocene strata which are well exposed in the cliffs of B. in Hampshire. They contain a variety of fossils of creatures of marine origin.

Barton-upon-Humber, anct. market tn. on the S. side of the Humber, Lincolnshire. At the time of the Norman Conquest it was one of the prin. ports of the Humber. The tn. contains 2 large churches, one of which is very old. There is considerable trade in corn, and bricks, tiles, ropes, sacking, sailcloth, and pottery are manufactured. Tanning is also carried on. Pop. 6300.

Barton-upon-Irwell, dist. of Lancashire, near Manchester, where the aqueduct constructed by Brindley conducts the Bridgewater Canal over the Irwell.

Bartsch, Johann Adam Bernhard von (1757-1821), b. and d. at Vienna; he received his education in the school of engraving at Vienna under Prof. Schmutzer. In 1781 he was appointed keeper of the prints of the royal collection, which led to the publication of his work *Le Peintre-Graveur* in 21 vols., 8vo., 1803-21, which is a description of the greater part of the works of the prin. engravers of Europe.

Bartsch, Karl Friedrich Adolf Konrad (1832-88), Ger. scholar, b. at Sprottau, Silesia. He was prof. of Germanic and Romance philology at Rostock (1858-71), and at Heidelberg (1871-88). He ed. numerous texts of Middle High Ger. and Provençal poetry, and pub. *Untersuchungen über das Nibelungenlied* in 1865, which he trans. into modern Ger. 2 years later. He also trans. the poems of Burns (1865) and Dante's *Commedia* (1867), while in 1874 he pub. a vol. of original lyrics. He also wrote critical works on the early literature and language of Germany and France.

Bartsch, Paul, Amer. naturalist, b. at Breslau, Silesia, Aug. 14, 1871; educated at the State Univ. of Iowa. He was appointed to the staff of the U.S.A. National Museum, Washington, and assistant curator and, later, curator, of marine invertebrates there. In 1899 he became prof. of zoology in the George Washington Univ. and then lecturer on medical zoology in the Howard Univ. Was Smithsonian representative in the Philippine expedition, 1907-9, and has represented that institution in many other expeditions. In the First World War he supplied a gas detector in chemical warfare. In 1920 he was Smithsonian delegate to the scientific congress at Honolulu. Author of numerous technical papers on biology.

Bartsia, genus of plants, chiefly herbaceous and semi-parasitic, belonging to the Scrophulariaceae, which grow in the N. temperate zone, on tropical mts., and in S. America. There are 3 Brit. species, of which *B. alpina* and *B. odontites* are 2. *B. maxima*, a native of Candia, grows to a height of 1½ or 2 ft.; *B. acuminata* is found in America.

Barttelot, Major Edmund Musgrave (1859-88), Brit. officer. He served in India, Afghanistan, and Egypt; joined the Stanley expedition for the relief of Emin Pasha (1887), and was murdered by one of his followers on a journey into the interior. Stanley brought a charge of cruelty against him, which was refuted by his brother, Major Walter G. B. B., in *The Life of Edmund Musgrave Barttelot*, 1890.

Baru, fluffy substance obtained from the sago palm *Saguerus saccharifer*, used for stuffing cushions and for calking boats.

Baruch (Heb., blessed), the son of Neriah, the son of Maaseiah, to whom Jeremiah dictated his prophecies, and who read the roll before the princes in the reign of Jehoiakim, about 606 B.C. During the siege of Jerusalem by Nebuchadnezzar, B. and his master were at first imprisoned, but were afterwards released and allowed to choose their place of residence; they afterwards went into exile in Egypt, c. 588 B.C. There is diversity of opinion concerning the close of his life. According to Josephus (*Antiq.* x. ix. 7) he went from Egypt to Babylon; but Jerome asserts that he d. in Egypt. See Jeremiah xxxii., xxxvi., xliii., xiv., and li.

Baruch, Bernard Mannes, Amer. economist, b. Aug. 19, 1870, son of Dr. Simon Baruch (q.v.). Going into finance B. was for many years a member of the New York Stock Exchange, and accumulated a large fortune. When the entry of the U.S.A. into the First World War was imminent, President Wilson made him a member of the advisory commission of the Council of National Defence. He became chairman of the committee on raw materials, minerals, and metals, and also head of the commission in charge of all purchases for the Allies. Wilson in 1918 made B. chairman of the War Industries Board, a body invested with vast power to co-ordinate Amer. industries for war-making purposes. After the armistice, he went to Paris with Wilson, who had him nominated a member of the Supreme Economic Council. As such, he played a leading part in drafting the economic and reparations sections of the treaty of Versailles. In 1919 he became a member of the Conference for Labour and Capital. During the Second World War he worked from 1943 as personal adviser to James Byrnes, then director of the Office of War Mobilisation. In Mar. 1946 he was nominated by President Truman as the Amer. member of the commission of 12 who formed the United Nations commission on atomic energy. B. is the author of *Making of Economic and Reparation Sections of Peace Treaty* (1920) and pamphlets on agric. and economic subjects.

Baruch, Simon (1840-1921), Amer. physician, *b.* at Posen, educated at the *.....* lum at Posen, and later, at the Medical College, Virginia. In 1889, after a distinguished career in New York, he diagnosed the earliest authenticated case of perforating appendicitis successfully operated on. He was the pioneer of scientific hydrotherapy in U.S.A. Piloted through the Legislature the bill which secured free public baths to the community, the first, the Livingston Bath, being opened in New York in 1901.

Barvas, parish of Lewis Is., Hebrides, Ross-shire, Scotland. Pop. 3000.

Barwick, John (1612-64), Eng. divine. He graduated at St. John's College, Cambridge, in 1635, and became M.A. in 1638. His loyalty to the Royalist cause obliged him to leave Cambridge; he communicated the designs of the rebels to Charles I., was charged with high treason and imprisoned in the Tower, 1650-2. At the Restoration, he became dean of Durham, 1660, and dean of St. Paul's 1661.

Barye, Antoine Louis (1795-1875), Fr. sculptor, *b.* in Paris. He studied sculpture under Bosio and painting under Gros. He is famous for his marvellous animal studies, which were the starting-point of a new type of art. Amongst these are the 'Lion Struggling with a Snake,' 'Lion Resting,' 'Theseus and the Minotaur,' 'Lapitha and Centaur,' and 'The Hunt of the Wild Ox.' There are sev. examples of his work in the gardens of the Tuileries. He was also successful with the human figure, as exhibited in his 4 groups, 'War,' 'Peace,' 'Strength,' 'Order.' He worked largely in bronze. See Ballin's *L'Œuvre de Barye*, 1890.

Baryta, barium monoxide (BaO), an earth occurring in the minerals barytes, or heavy spar, and witherite. The original name was *barote* (from *bapis*, heavy), but Lavoisier's alteration to *B.* has been universally adopted. It was at first thought to be an elementary substance, but prolonged investigation led to its being separated into the metal barium (*q.v.*), and oxygen. *B.* is formed when barium burns in air, or by heating barium nitrate until no more red fumes are given off. It may also be prepared by heating witherite mixed with charcoal to a white heat. It is a greyish-white solid, with sp. gr. about 5; it melts at 2000°. When heated with air barium peroxide (BaO_2) is formed. Baryta water is a solution of barium hydroxide in water. It is used as an absorbent for carbon dioxide.

Barytes, Barite, heavy spar, or barium sulphate, mineral, important as chief source of soluble barium compounds, and as a pigment under the name of permanent white. It derives its name from its high sp. gr. (4.5) as compared with other mineral sulphates or other minerals with the same general appearance. It occurs in rhombic crystals of varied forms, and may be artificially produced by acting upon baryta with fuming sulphuric acid. The natural sulphate is commonly found associated with lead and silver ores, and is prepared for use as a paint by being

finely ground, usually along with white lead, treated with sulphuric acid to remove iron salts, washed, and dried.

Baryton, also called *Viola di Bordone*, stringed musical instrument resembling in tone the viola da gamba. It was invented in 1700, and has now fallen into disuse. Haydn composed a large number of works for this instrument.

Bas, or Batz, is. in the Eng. Channel, off the N. coast of the dept. of Finistère, France. It is about 2½ m. long and 2 m. broad. The is. has 3 vils., a fine light-house erected on a hill 223 ft. above the sea level, 2 forts, and a haven, that of Kernoe. The chief occupation is fishing. Pop. 1200.

Bas, or Bas-en-Basset, tn. in the dept. of Haute-Loire, arron. Yssingeaux, France, on the l. b. of the Loire, 17 m. S.W. of St. Étienne. There are mineral springs; corn and the vine are grown, and there are manufs. of pottery, ribbons, and lace. Pop. 2600.

Bas, William, see *BASSE*.

Basalti, Marco, It. painter, *b.* in the Friuli, probably about the middle of the fifteenth century. He lived chiefly in Venice, where he was the rival of Giovanni Bellini, to whom he was even superior in some respects, especially in composition, in accessory groups, and in the management of the landscape or scene. Some of B.'s works are still among the most brilliant paintings extant in regard to colour. There are still sev. of his works in Venice. His masterpiece is the 'Calling of St. Peter and St. Andrew,' in the Academy of Venice, formerly in the old church della Certosa. There is a beautiful 'Descent from the Cross,' by B., in the Gallery of Munich.

Basalt, igneous rock. The Lat. *basaltis* is derived from an African word meaning a stone containing iron, and many varieties of the rock contain iron in the form of magnetite. Igneous rocks are broadly divided into acid rocks containing a large amount of silica, such as granite; and basic rocks, in which silica as quartz is absent, and a comparatively large amount of iron and magnesia is present. The most abundant member of the latter group is *B.*, which consists chiefly of plagioclase feldspar, augite, and olivine. Under the microscope the minerals augite and olivine appear embedded in a crystalline ground mass of plagioclase feldspar, augite, and magnetite. In older rocks the olivine is frequently altered in part to a fibrous green serpentine. *B.* rocks are of common occurrence in Iceland, Skye, Mull, Antrim, central France, Germany, Italy, Washington, Idaho, the Deccan, Sandwich Islands, etc. They represent lava which has exuded from fissures in the ground, and has spread over a considerable surface. The stresses to which the cooled rocks were subjected resulted in a network of cracks or 'joints' of a roughly hexagonal shape, similar to the cracks produced in dry mud under certain circumstances. Hence many of the basaltic rocks of N. Ireland and W. Scotland exhibit a columnar structure, as in the Giant's Causeway and Fingal's

Cave. B. was known to the anc. Egyptians and Romans, who used it for building purposes. In Rome it was introduced in the first century B.C., the black, green, and brown varieties having been identified. The basaltic plateau of Auvergne played a part in the controversy between the 'Vulcanists' and 'Neptunists' of the latter part of the eighteenth century. The 'Neptunists,' led by Werner, held that igneous rocks were produced by chemical precipitation from the ocean which covered the surface of the earth at one time. In 1752 Guettard, by a careful study of the B. rocks of Auvergne, showed that they were true lavas, not necessarily ejected from cone-and-crater volcanoes, but gradually extruded from fissures in the earth's crust and extending themselves in all directions.

Baschi, tn. in Umbria, Italy, on the Tiber. It is 29 m. N.N.W. of Perugia. Pop. 6000.

Bascinet, **Basinet**, or **Basnet**, light helmet, so called from its resemblance to a basin, generally without a visor, though the visor occasionally accompanied it. Bs. were worn in the reigns of Edward II., Edward III., and Richard II. by most of the Eng. Infantry.

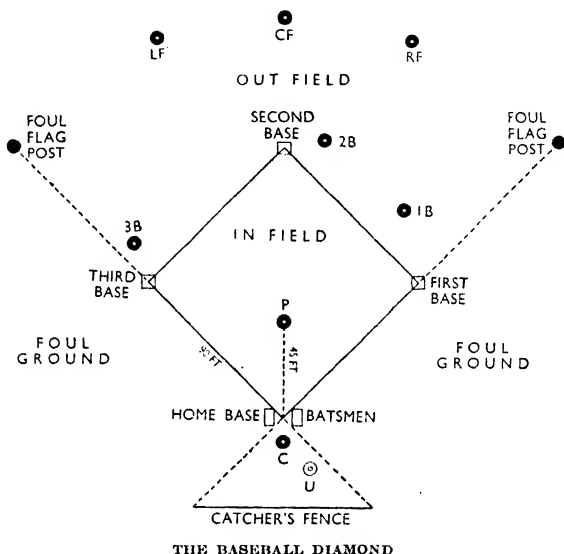
Base (Gk. *basis*), foundation or starting-point. In geometry, the line or surface upon which a figure or solid stands. In games, such as baseball and prisoner's B., the station to or from which the player proceeds. In heraldry, the lower portion of a shield, often cut off from the remainder by a horizontal line. Any figure which is placed in this lower part is said to be in B., and if it does not occupy the central portion it must be distinguished as being in the dexter or sinister B. point. In architecture, the lowest member of a column upon which the shaft rests. In the military art, a secure position where the main supplies and reserve forces are kept, which is connected with the attacking forces by defended lines of communication. In chem. a B. is a substance which is capable of combining with an acid to form a salt. In inorganic chemistry, Bs. are usually oxides and hydroxides of metals. The term is most often applied to the oxides of the alkali metals and the alkaline earths which combine readily with water, forming hydroxides. A distinguishing feature is the power of turning red litmus blue. In organic chemistry, many substances exist, such as the alkyl compounds and the ammonia derivatives, which are capable of combining with acids to form organic salts.

Baseball, the national game of the U.S.A. It was founded on the old Eng. game of rounders, to which it is still very similar, but has now been reduced to a science and skill quite unknown in the former pastime. It is a game of comparatively modern origin, and one of the first mentions of it in literature may be Jane Austen's in *Northanger Abbey* (1798). The first club was formed at New York in 1845, and known as the Knickerbocker Club, and in 1865 another club, the Excelsior, was formed at Boston. After that

date its popularity increased, and to-day its followers number millions of all grades of society. The World Series B. Contests have been held since 1884, and in addition there are the National League and the Amer. League. The first professional club was formed at New York in 1871, and 5 years later the National League of Professional Baseball Clubs was formed, which to-day, working with the Amer. Baseball Association, holds a position equivalent to the M.C.C. in the cricket world. The game is played by 9 players on each side. The bat is round, and must not exceed 42 in. in length and 2½ in. in diameter at the thickest part. A player may choose what weight of bat suits him best. The average weight of bats used by big league players is 36 oz. The ball weighs about 5 oz. and is about 9 in. in circumference. The ground is in the form of a diamond, 90 ft. square. The first B. diamond was laid out in 1839 by General Doubleday, and his demarcation has not been altered. The rules were standardised in 1887. Bases are placed on each angle, and are known as home, first, second, and third bases. The ball is delivered with great swiftness by the pitcher, who stands within the diamond, to the batsman, who stands by the home base. The catcher is behind the latter, while the fieldsmen take up positions as first, second, and third basemen, the short stop, centre fielder, right fielder, and left fielder. The batsman must, after hitting the ball fairly, attempt to make the circuit of the bases at the angles of the diamond. If he succeeds he scores a run. He may stop at any base and try to steal on to the next while another batsman plays, but if he is touched by the ball away from the base he is out. He must always move on to make room for another base-runner. A batsman may be put out by failing to hit the ball after 3 attempts, in which case he is said to be 'out on strike,' and by being caught out by any of the fielders. Nine innings make up a game, unless the score stands at a tie at the ninth innings, in which case the game is continued till one or other of the teams is ahead at the end of the next innings played. An innings is closed when 3 men are out, and it is not necessary to wait until the whole side are out. This not only equalises the chances of both teams at batting, but of all the members of each team. In an ordinary game each player has from 5 to 6 chances at batting and to make runs, so that if he fails at the first attempt he has still other chances. The enjoyment of the players is not centred in the batting, for the fielding is so diversified and presents so many opportunities of distinction, that many players enjoy it quite as much as the batting. Upon the celerity and accuracy of the fielders' movements the whole game may turn. Then in the pitching there is art and skill required, to get curves, twists, and shoots on the ball. To such perfection have pitching and fielding been carried that in many professional games the score is rarely taken into double figures.

Baseball statistics (1939-47): *U.S.A. Championships—National League: Cincinnati Reds (1940); New York Yankees (1936-39, 1941, 1943); St. Louis Cardinals (1942, 1944); Chicago Cubs (1945); Brooklyn Dodgers, 1947. American League: Detroit Tigers (1940, 1945); Brooklyn Dodgers (1941); New York Yankees (1942, 1943, 1947); St. Louis Browns (1944); Boston Red Sox (1946). World Series: New York Yankees (1936, 1937, 1938, 1939, 1941, 1943); Cincinnati*

of a riv., but in inland warfare may be a mountain range or stretch of plain. The only essentials are that the base should command a line of open communications between the army and either the mother country or that of an ally. An army cut off from its B. of O. and a base cut off from its source of supplies are more or less useless; but in modern warfare, the development of paratroops and airborne troops and supplies has made it possible to operate within enemy territory or



THE BASEBALL DIAMOND

U, umpire; C, catcher; P, pitcher; 1B, first baseman; 2B, second baseman; 3B, third baseman; LF, left field; CF, centre field; RF, right field.

Reds (1940); St. Louis Cardinals (1942, 1944); Detroit Tigers (1945). *Wembley*: Canadian Army beat U.S. Army, 5-3 (Aug. 1942); U.S. Air Force beat U.S. Ground Forces, 7-0 (Aug. 1943); U.S. Army beat Canada, 6-3 (Aug. 1943). See M. V. Charnley (ed.), *Secrets of Baseball* (London and New York), 1927.

Base Fee, see ESTATE; FINES AND RECOVERIES.

Base of Operations, term used in warfare for the depot where everything required for the fighting army—munitions, food, transport, tanks, relief troops, etc.—is collected and organised before being sent to the front, and where the wounded can be attended until recovered or transported to their homes. The development of aircraft, however, has made it possible to transport wounded men immeasurably greater distances than in pre-aircraft days. The B. of O. is usually a seaport on the bank

enemy-occupied territory regardless of a B. of O., as, *e.g.*, in the case of Wingate's famous Chindits in the campaign to Burma in the Second World War. In the Franco-Prussian war of 1870 the Prussian B. of O., for instance, was the chain of fortresses which line the banks of the Rhine; in the South African war, 1899-1902, the Brit. base was Cape Town; in the First World War the base of the B.E.F. was Boulogne, of the Armée de l'Orient, it was Salonika; and, in the Second World War, Cairo was the base of the Brit. Eighth or Desert Army. Sydney was MacArthur's (*q.v.*) base. Rome was the allied base in the later stages of the campaign in Italy. *See also* *under* ARMY.

Basedow, Johann Bernhard, originally **Johann Berend Bassedau** (1723-90), Ger. educational reformer, *b.* at Hamburg and *d.* at Magdeburg. In 1753 he taught at Sorø, in Denmark, and in 1760 in a school

at Altona, which he was obliged to leave in the following year because of his heterodoxy. In 1762 Rousseau's *Emile* gained in him a strong admirer, and increased his desire to instruct youth according to nature in all things. In 1774 he pub. his *Elementarwerk*, infused with the theories of Rousseau; it was an illustrated school-book, pub. by contributions from influential and wealthy people. In the same year he opened his Philanthropin at Dessau to carry his theories into practice, but after 10 years he found himself unable to cope with it, owing to his restless and quarrelsome disposition. He then devoted himself to private tutoring, and the Philanthropin was closed 3 years after his death. He is noteworthy as the forerunner of Froebel and Pestalozzi, and his work as a reformer has had great influence on education throughout Europe.

Base Exchange, method of softening hard water. The water is run through a tube containing a form of sodium aluminium silicate (e.g. permutit), when the calcium salts which cause the hardness react to form calcium aluminium silicate; this is left in the tube and the water is softened. When the sodium aluminium silicate has all been converted into calcium aluminium silicate, the tube is filled with a strong solution of common salt (sodium chloride), and sodium aluminium silicate is re-formed. The calcium is converted into the very soluble calcium chloride, which dissolves in the water, and is run off to waste. The softener is then ready for action again.

Basel, Basle, or Bâle, second largest tn. of Switzerland, with pop. (1941) 162,000, two-thirds Protestants, lies on both sides of the Rhine, where France, Germany, and Switzerland meet. It is mentioned as a fort in A.D. 374 (the name means a royal residence, *Basilia*). The middle classes freed themselves from the dominion of the bishops and nobles and Austrian grand dukes, and in 1501 the tn. became a member of the Swiss Confederation. It was one of the literary centres of Europe, and so many books were printed at its presses between 1468 and 1500 that there are 324 in the library of the Brit. Museum. The univ. was founded in 1460 and became famous under Erasmus. In 1529 B. accepted the Reformation and became one of its chief centres. The picture gallery contains paintings by Holbein who lived at B. in 1515-26. The univ. library contains 433,000 vols. and 267,000 pamphlets. B. is one of the chief industrial and commercial centres in the country. There is weaving of silk ribbon and a flourishing chemical industry. B. is the seat of the Bank for International Settlements estab. in 1930.

Basel, or Bâle, canton of Switzerland, divided into 2 half-cantons in 1833 after civil strife between the peasants of the rural part and the citizens of the tn. The latter were worsted, and their share of the canton was limited to the tn. and 2 communes, Basel-stadt or Bâle Ville, area 14 sq. m., pop. (1941 census) 170,000, with constitution dating from 1889. The remainder of the canton comprising

Basel-land or Bâle Campagne has an area of 165 sq. m., mainly agric. land, and a pop. (1941 census) of 94,500, with constitution dating from 1892.

Basel, Council of, seventeenth œcumenical council, met in 1431, Eugenius IV. being pope and Sigismund emperor of the Holy Rom. Empire. The main purpose of the council was to conciliate the Hussites, but the pope refused to sanction the movement and ordered the council to be dissolved. This order was disregarded, as was also the order that the council should remove to Italy. The council ratified the right of the general council to exercise authority over the pope. It concluded a peace with the Hussites, known as the treaty of Prague, 1433. The council was œcumenical up to its twenty-fifth session, and the pope ratified only those of its decrees which dealt with the eradication of heresy and the peace of Christendom, and only those reforms which did not detract from the rights of the Holy See. In 1438 the council continued at Ferrara, having a brief prospect of union with the Gk. Church. The pope failed to appear and the council then issued a decree suspending him from office. He was formally deposed, and in 1439 Duke Amadeus of Savoy was elected in his place. Eugenius held his position, however, and re-assembled the council at Florence (1439). On his death a compromise was effected whereby the council directed the Church to obey the new Pope Nicholas V. See COUNCILS.

Base Line, in surveying, is a measured line which forms the side of a triangle, and of which the adjacent angles are also measured, so that the third point of the figure is easily determined. The country to be surveyed being thus mapped out in triangles, the details can be filled in without overlapping. In large surveys many B. Ls. are drawn, varying in length from 3 to 10 miles.

Basement, in architecture, is the lowest story of a building. Medieval and Renaissance palaces were built with Bs., which possessed a more massive, but plainer, exterior than the rest of the building.

Bassey, tn. of the Philippine Is. It is on the San Juanico Strait, Samar Is. Pop. 14,000.

Bashahr, one of the trib. hill-states of the Punjab, India, on the lower slopes of the Himalayas. Pop. 90,000.

Bashan is called by the Septuagint *Basán*, by Josephus and Ptolemy *Batanea* (Batanea). B. belonged to Gilead in the widest sense, but in a stricter sense it was distinguished from and situated to the N. of Gilead. B. bordered in the N. upon the Syrian dists. Geshuri and Maachathi; in the S. it did not reach to the It. Jabbok. Its W. boundary was the Jordan. The E. limits are undefined.

B. was a kingdom under Amoritical sovereigns who resided in Ashtaroth and in Edrei. Og was the last king of the Amoritical dynasty. In the battle of Edrei, about the year 1452 B.C., the Israelites smote Og, with his sons, and all

his people, until there was none left alive; and they possessed his land (Num. xxi. 33). Moses gave B. unto the half tribe of Manasseh, 1451 B.C. (Num. xxxii. 33). At the commencement of the Christian era B. belonged to the tetrarchia of Philippos, and afterwards to the tetrarchia of Agrippa II.

Bashaw, see PASHA.

Bashee Islands, group of is. situated between the is. of Luzon and Formosa, and producing sugar-canes, plantains, and yams. Pop. 10,000.

Bashford, Herbert (1871-1928), Amer. author and playwright, many of whose stories and poems deal with the Far West. He acted as a librarian, first at Tacoma, Washington, and then as state librarian of Washington, which latter appointment he resigned in 1901. Two of his plays were produced in his lifetime, *The Woman he Married* and *Taken In*.

Bashibazouke, irregular Turkish troops serving under the sultan and receiving their reward chiefly from plunder. They were greatly responsible for the Bulgarian atrocities of 1876.

Bashkiria, autonomous republic of the R.S.F.S.R., with an area of 40,020 sq. m. created in 1919, extending into the Ural Mts. in the E. of Russia. Pop. 2,700,000. Capital Ufa (pop. 250,000). About half the pop. are Bashkirs and Tatars, but the townspeople are mainly Russian. The Bashkirs are either settled and engaged in agriculture, etc., or nomadic, rearing cattle. They profess Mohammedanism.

Bashkirtseff, Marie (1860-84), Russian painter and diarist, was b. of wealthy parents at Poltava, Russia. At the age of 13 she instituted a diary which she continued to the time of her death, inscribing in it her joys and sorrows, her enthusiasms and her ambitions, above all, her passionate desire for immortal fame. She was endowed with a beautiful voice and considerable literary gifts, but chose painting as her final expression in the arts, and her picture of 'The Meeting,' 1884, may be seen now in the Luxembourg. She travelled much in Rome, Nice, Paris, and other continental tns., establishing for herself a reputation as a woman of society and culture, but when only 24 she succumbed to consumption. See Mathilde Blind, *A Study of Marie Bashkirtseff*, 1892; *The Journal of Marie Bashkirtseff*, trans. by Mathilde Blind (2 vols.), 1890; *The Letters of Marie Bashkirtseff*, trans. by Mary J. Serrano, 1891; Dormer Creston, *Fountains of Youth*, 1936.

Basi, tn. of the Punjab, India, 140 m. S.E. of Lahore. Pop. 14,000.

Basic English, a 'pocket English' with a vocabulary of some 850 words. The first work on 'basic'—or British-American-Scientific-International-Commercial English—was written by I. A. Richards of Cambridge, and later of Harvard Univ., and C. K. Ogden of the Orthological Institute at Cambridge. Its advocates contend that it can give the sense of anything which may be said in Eng. Actually it was found that 1000 words were needed to put the N.T. into B. E. This is a remarkably small vocabulary, but even

normal Eng. has reduced its vocabulary by discarding most of the inflections and its subjunctive mood. In 1943 Mr. Winston Churchill persuaded the Cabinet to set up a committee of ministers to report on B. E., with a view to inquiring into the possibilities of extending the use of Eng. as an international language—in which latter respect it has a great advantage, as an easy language for foreigners to learn, over Esperanto, Volapük, Ido, Novial, and Solresol. A similar idea was under consideration in 1939, when the Gov. appointed a committee of the Economic Advisory Committee to examine the methods of teaching simplified Eng. to those who did not speak the language, but the war broke out soon afterwards and the committee never met. B. E. would, no doubt, be of some value in Brit. colonial territories in developing the policy of stimulating educational advance among backward peoples. B. E. has made headway in many countries as a quick method of giving some facility of expression in Eng. The Local Examinations Syndicate of Cambridge Univ. include texts in B. E. as options in Eng. literature for the Oversea Junior Certificate and they regularly set examination question papers, in B. E., on the Basic N.T. In 1947 the Crown purchased the copyright of B. E. for £23,000. See C. K. Ogden, *Basic English and its Uses*, 1943; *The Basic Dictionary* (for translators), 1932.

Basidu, **Basidom**, or **Bassadore**, port at the N.W. extremity of Kishm Is. in the Persian Gulf. It was ceded to Great Britain in 1817, and used as a naval base in the suppression of piracy.

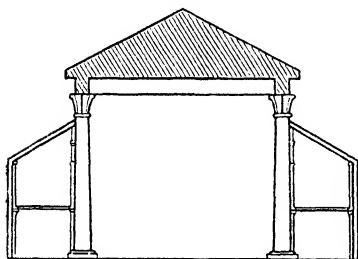
Basil, name applied to sev. species of Labiatae. The sweet B., *Ocimum basilicum*, grows in India and is cultivated as a pot-herb; *Calamintha acinos* is the common B., and *C. clinopodium* the wild B. The B. famed in romance and art is the *Ocimum basilicum*; it is immortalised in Boccaccio's *Decameron*, in Keats's poem, and in Holman Hunt's painting of 'Isabella and the Pot of Basil'.

Basil, or **Basilius** (Βασίλειος) (A.D. 326-79), commonly called St. B., and on account of his learning and piety surnamed the Great; b. at Caesarea, studied at Antioch and Constantinople. Libanius was his master, or more probably, his fellow student. He went to Athens where he met Gregory of Nazianzus; returned to Cappadocia, 355, and taught rhetoric; travelled in Syria, Egypt, and Libya, visiting the monasteries; he was so pleased with the lives of the monks that he determined to found a monastery in Pontus. At the death of Eusebius, 370, he was chosen bishop of Caesarea; he refused to embrace the doctrine of the Arians, and in consequence was much persecuted by the Emperor Valens. His works were issued in Gk. by Frobenius at Basel, 1532, with a preface by Erasmus. See J. N. W. B. Robertson, *The Divine Liturgies of John Chrysostom and Basil the Great*, 1894; E. F. Morison, *St. Basil and his Rule*, 1912; R. J. Deferrari (trans.), *Letters of St. Basil*, 1926.

Basil, Monks of St. St. Basil, about the year 358, when he retired to Pontus, founded a monastery for himself and his followers, and drew up its regulations, which were soon adopted in other monasteries. All who followed it styled themselves of the order of St. Basil, and St. Basil's Rule was the parent of that one afterwards framed by St. Benedict. In 1057 the order was introduced in the W. In Spain the monks of St. Basil follow the Gk. ritual, and in Italy the Lat.; there are or were many in Russia. The order is never known to have existed in England.

Basilan Is., the largest is. on the Sula Archipelago, separated from Mindanao Is. by the strait of B. The cap. is Isabela, and the pop. about 12,000.

Basilica (Gk. *Βασιλική*), a royal residence), name given by the Romans to public buildings with spacious halls, often surrounded with wide porticoes, and used for



ELEVATION OF BASILICA

the administration of justice, and for business purposes. The first one built in Rome was the B. Porcia, 184 B.C., and they continued to be erected until the beginning of the fourth century A.D. The B. consisted of a large roofed building, supported on columns. The roof rose high above the other part of the structure, which consisted of 2 galleries, called porticus, placed one above the other, and round the internal sides of the central building. The porticus was covered with a lean-to roof. At the end of the central part of the interior a raised platform formed the tribunal for a magistrate. The central space corresponded to what we call the nave of a church, and the porticoes to the aisles. It is probable that Rome possessed basilicæ in all the different fora of the city. The B. Ulpia formed a part of the Forum Trajanum, and a B. of the Corinthian order, was discovered on the Palatine Hill. The temple of Peace in the forum has been called the B. of Constantine. It is in Pompeii, however, that the most perfect B. of antiquity exists. Many of the early Christian churches of Rome were built in the style of the basilicæ. Modern basilicæ are still found in It. tns., and are used for civil purposes.

Basilica (*Βασιλική*, *Βασιλικὸς νόμος*), Gk. code, begun c. A.D. 876 by the Em-

peror Basilius I., and completed by his son Leo VI. the philosopher, and pub. in 60 books, in 887. It was revised by the order of Constantine VII., about A.D. 945.

The B. comprised the *Institutes*, the *Digest* or *Pandect*, *Code*, *Novellæ*, and the *Imperial Constitutions* made after the time of Justinian, in 60 books, which are subdivided into titles. The extracts from the *Digest* are placed first under each title, then the constitutions of the *Code*, and next the extract from the *Institutes* and the *Novellæ*. The B. does not contain all that the *Corpus Juris* contains, but it contains some things which are not in the *Corpus Juris*. An ed. of the larger part of the B., by Fabrot, was pub. at Paris in 1647, 7 vols.

Basilicata, one of the original 16 *compartimenti* of the It. kingdom. It formed part of anct. Lucania on the gulf of Tarentum, and its chief tn. is Potenza. It corresponds to the prov. of Potenza. Pop. 469,560.

Basilicon (Gk. *Βασιλικόν*, royal), name sometimes applied to sev. resin ointments, consisting of yellow wax with lard and rosin, or of Burgundy pitch, suet, and turpentine. It is usually known as *ceratum resinæ*, or resin cerate.

Basilicon Doron (Gk., royal gift) is the title of a book written by James VI. of Scotland in 1599 for his son, Prince Henry. In it he expounds his theory of the divine right of kings.

Basilides (fl. A.D. 125), founder of a Gnostic sect, lived in Alexandria under the Emperors Trajan and Hadrian. In his doctrines he reflected Zoroaster, but his tendency towards asceticism was discarded by his later followers. He taught the doctrine of emanation, beginning with the emanation of mind from Abraxas, the Supreme Power, down to the creation of 365 worlds by a number of angelic powers. There were 365 emanations, a mystic number constantly occurring in this religion; the name Abraxas itself being a corruption of Abrasax, a Gk. word of which the letters are computed to make the number 365. Little is known of the life of B., who d. c. A.D. 130.

Basilisk, name given by the Gks. and Romans to an imaginary creature possessing the power of killing by means of its deadly glance and burning, poisonous breath. The name has been given by zoologists to a genus of tree lizards of the family of *Iguanidæ*, which are perfectly harmless. They are to be found in Central America, where they are considered to be edible. *Basiliscus mitratus* is the most common species, and is noted for its scaly helmet.

Basilius I., the Macedonian (d. 886), emperor of Constantinople; at the age of 25 became a favourite of the Emperor Michael III., who made him his colleague. B. murdered him, and was proclaimed emperor. He ruled wisely, and began to compile the code of laws completed by his son Leo (see *BASILICA*). He dismissed Photius (q.v.) and re-estab. the patriarch Ignatius; fought with the Saracens; helped to convert the Russians, but

quarrelled continually with the Rom. Church; left a book of advice (*Κεφάλαια Παρανευτικά*) to his son Leo.

Basilius II. (d. 1025), son of Emperor Romanus II., at whose death the crown was usurped by Phocas, who, 6 years after, was killed by John Zimisce; the latter took the crown, but acknowledged as his successors B. and his younger brother, Constantine. In 975 they were proclaimed emperors under their guardian B. the Eunuch; warred with the Saracens, Bulgarians, Slavonians, the Emperor Otho III., the Longobard dukes of Benevento. In 1014 B.

from the place of his birth. He studied at Oxford, Paris, and Athens; he brought home with him sev. Gk. manuscripts, and was promoted by Grosseteste to be archdeacon of Leicester. He introduced what were thought (by Matthew Paris, who writes of him) to be Gk. numerals, but which were neither Gk. nor Arabic.

Basingstoke, mkt. tn., parl. and municipal borough of Hampshire, Eng. It is the terminus of the London and Hants canal. It has manufs. of agric. implements, clothing factories, etc. The remains of the castle destroyed by Cromwell in 1645 may be seen, and traces of



W. F. Mansell

BASILICA OF S. AMBROGIO, MILAN

This church was severely damaged in the Second World War.

defeated Samuel, king of the Bulgarians. Vladimir, grand duke of the Russians, married B.'s sister and received the baptism, 988, abolishing paganism. B. was succeeded by his brother Constantine as sole emperor.

Basilosauros, former name for a fossil animal found in the Eocene of N. America, New Zealand, Europe, and Egypt. It is a mammal of the order Cetacea, and is allied to the dolphins and porpoises. See ZEUGLUDON.

Basin: 1. Term used in geography to indicate the whole tract of country drained by a certain riv. 2. In geology, term applied to depressions of the strata occasioned by synclinal dips, especially such as are on a large scale. The tertiary Bs. of London, Hampshire, and Paris rest on chalk, and the coal basin of S. Wales rests on old red sandstone.

Basing, or **Basingstoke**, John (d. 1252), Eng. scholar, who received his name

Rom. occupation have been found. Area of parish 4195 ac. Pop. 14,000.

Baskerville, John (1706-75), Eng. printer, b. at Wolverley in Worcestershire. Having a talent for calligraphy and carving in stone, he kept a writing school in Birmingham. In 1745 he entered the japanning business, making a fortune by improvements in the process. Soon after this he experimented in typefounding, and produced types far superior in distinctness and elegance than had previously been used. He then estab. his own printing-house, publishing a *Virgil* in royal quarto, a *Terence*, *Horace*, etc., all being fine specimens of typography. But as the sale did not justify his hopes, he did not print many works. Specimens of the B. press have long been rare.

Basket, vessel of willow twigs, rushes, cane, or other materials, used for the purpose of holding, carrying, and protecting articles. The etymological derivation

of the word is obscure, the connection with the Lat. *bascanda* being now discredited. The probable derivation of 'basket' from *bascanda* through O.F. *basche* is supported by Wyld, *Universal English Dictionary* (1932, 1936). In older times other things than Bs. were made in B.-work, the shields, huts, and boats of the early settlers in Europe being of osier-work, plastered with clay. From the earliest times down to the middle of the nineteenth century no considerable changes in B.-work have taken place. In the latter half of the nineteenth century, however, the character of B.-work was greatly changed, cheap goods made in Europe driving out the old small domestic wares, whilst in the higher types of work chairs, tables, etc., were produced of considerable beauty and utility. Of late years the Eng. B. trade has been somewhat better; the Basketmakers' Company, which still exists, is one of the oldest craft guilds of the city of London. Vegetable and fruit Bs., and protective wicker cases for fragile goods, are the prin. articles made in B.-work. No machinery is used in the making of Bs., and consequently a certain amount of natural aptitude, as well as considerable training, is required to make an expert workman.

Certain species of willow are the most largely used materials for B.-making. Large quantities are grown in Europe, and exported to Great Britain and the U.S.A., but no rods surpass in suitability those of England. The finest specimens are grown in Leicestershire and Nottinghamshire, and the valleys of the Thames and Trent. In the early years of the nineteenth century the Eng. industry was given an impetus by a premium offered by the Society of Arts. The most extensive Eng. willow plantation is at Thurleston, near Leicester, and is 100 ac. in area. Sev. continental varieties have been introduced into this plantation with considerable success.

Willows are divided into 'osier' and 'fine' varieties. They are sorted into various sizes, and soaked in tanks to render them pliable, with the exception of the 'uprights,' for periods varying with the size of the rods from half an hour to a week. The 'brown stuff,' or unpeeled rods, are used for the coarser work, whilst the 'white stuff' and the 'buff,' which is boiled before peeling, are used for the more delicate work. When necessary the rods are divided into 'skains' of different sizes by a 'cleaver,' a wedge-shaped tool, then by a kind of spoke-shave, and trimmed off by a flat piece of steel with a cutting edge at each end. Other tools used by a B.-maker are a shop knife; a picking-knife, to trim off the ends; 'bodkins,' flat triangular pieces of iron; shears, and a 'dog' for straightening the sticks. The employer supplies a screw-block, or a vice, and a lapboard. These comprise all the tools used, but a common round B. can be made with no other tools than a bodkin and a shop knife. In making a B. the bottom sticks are first woven together, forming the 'slath,' or foundation of the B. The uprights, stouter rods than the

'woof' of the B., are then fixed into the slath, and the other rods woven in and out between them till the required height is reached. The ends which then project are turned down alternately inside and outside the B., thus fastening and completing it. A lid is then made in the same way as the bottom of the B., and is fastened on by pieces of twine or a hinge formed by rods.

Other materials used in making Bs. are cane (*Calamus viminalis*), whole or made into skains, whilst the central pith of the cane is largely used in Great Britain and Europe in the manuf. of wickerwork furniture. From splints of various species of bamboo the Chinese and Jap. manuf. Bs. which are marvellous in beauty and delicacy of finish. Bs. are also made from the fronds of the Palmyra palm. In Spain and Algeria fruit Bs. are made from esparto fibre, in the Seychelles from the fronds of palms, and in other places cuscus grass, straw, and various species of pine are used.

The chief centres of the industry in England are London, Thurleston, Basford near Nottingham, and Grantham. Fr. Bs. from the Verdun dist. and Aisne dept. are imported into Great Britain, but in much smaller quantities than formerly. Belgium, Sonnefeld in Saxony, and Japan, all produced large quantities of Bs. and basket-work before the Second World War. Ordinarily the chief importers into this country are Japan and France, and an increase in the quantity of Jap. goods imported before the First World War was counterbalanced by a heavy decrease in imports from France. The Board of Trade returns give a monthly average value of imports of Bs. and basketware in 1938 of £14,000, but the imports fell away during the years of the Second World War. Consult T. Okey, *An Introduction to the Art of Basket-Making*, 1932; C. Crampton, *Cane-work*, 1935.

Basket Ball, game played by opposing teams of 5 with an inflated ball, resembling a football. It may be played in the open air or on a covered floor in a space not exceeding 3500 sq. ft. At each end of this oblong space is fixed a pole, 10 ft. in height, to which is suspended from metal rings, 18 in. in diameter, a 'basket' or net bag. The object of each team is to throw the ball into the opponents' basket, or goal, and to guard their own goal from the opposing team. Each team may use 5 substitutes; 2 points are awarded for a goal, except penalty (1 point). The ball, which is about 30 in. in circumference and 20 oz. in weight, must be played with the hands and may not be kicked. Any kicking, or intentional rough play, such as tackling or shouldering, is regarded as a foul; the penalty is 1 or 2 free throws to the opposing team, from a distance of not less than 15 ft. from the basket. The game was invented in 1891 at a sitting by James Naismith, of the Y.M.C.A. at Springfield, Massachusetts.

Basket-fish, name given to echinoderms, of the class Ophiuroidea. They resemble star-fish in appearance, having the same

number of arms, and obtain their name from their habit of coiling these arms over their mouths when they fear danger.

Basking Shark, or Sun-fish (*Selache maximus*), mackerel shark, one of the largest fishes extant, being sometimes 30 ft. in length. It belongs to the family Lamnidae and order Selachii. Its popular name is derived from its habit of basking near the surface of the water. Despite its great size and strength it is harmless unless attacked.

Basle, see **BASEL**.

Basnage, a celebrated Protestant Fr. family: (1) Nicolas, a religious refugee, who came and settled in Norwich, where he had a congregation. Afterwards returned to France. (2) Benjamin (1580-1652), son of above, pastor of his father's church at Carentan; a zealous defender of the Reformed Church in France. (3) Antoine (1610-91), son of above; after the revocation of the edict of Nantes escaped to Holland. Died at Zutphen, where he had a pastoral charge. (4) Samuel (1638-1721), son of above, b. at Bayeux; preached here at first, but escaped to Holland with his father. Died at Zutphen. He wrote voluminously in Fr. and Lat. (5) Henri (1615-95), youngest son of Benjamin, b. at St. Mère Eglise; studied for the bar, and became one of the most eloquent advocates in the parliament at Rouen. His works were pub. at Rouen, 2 vols. fol., 1776. (6) Jacques (1653-1723), son of above, the most celebrated of his family. Studied at Saumur under Tanaquil le Fèvre and at Geneva and Sedan. Received into the ministry at Rouen, 1676. In 1685, when the church was closed, he received permission to retire to Holland; settled at Rotterdam; was acquainted with many scholars of all countries, including Bayle; he was esteemed by Voltaire. His works were principally theological. (7) Henri (1656-1710), son of Henri above, b. at Rouen, followed the profession of his father. On the revocation of the Edict of Nantes took refuge in Holland, where he d.

Basoche, or **Bazoche**, a corporation of the clerks of the parlement of Paris which existed from about 1302 until the time of the revolution. Philip the Fair is supposed to have been the founder, and to have granted the members certain privileges, among them exemption from the jurisdiction of the common law.

Basque Roads, Action in the, a naval engagement in the Basque Roads, below the is. of Aix, near Rochefort, where the Fr. fleet of 14 ships was attacked by Lord Cochrane, in command of the fireships, and Lord Gambier, Apr. 11-12, 1809. There was a panic among the Fr. sailors, 12 ships ran aground, and 4 were destroyed. Cochrane thought that the victory would have been more complete had he received more active support from his superior, Gambier. The latter was accused of negligence at a court martial, but was acquitted, and Cochrane was obliged to retire on half-pay. See H. G. M. Chatterton, *Memorials of Gambier*, 1861.

Basques (Sp. *Vascongados*), race of

people dwelling on the slopes of the Pyrenees, occupying on the S. the Basque provs. of Vizcaya, Alava, and Guipúzcoa, and Navarre in Spain; on the N. the 2 Fr. departments of Bayonne and Mauléon. Bilbao (pop. 176,000) is the cap. of the Sp. Basque region. The word B. is derived from the Lat. *Vascones*, which word in its Germanic form, *Wascones*, has also given a name to the Gascons, an entirely different people. Perhaps no race has raised so much discussion as to its origin as that which we are now considering, and the question is still unsettled. There is no doubt as to the extreme antiquity of the Basque settlements on the Pyrenees. Moreover, place names throughout Spain, Sicily, Sardinia, and Corsica bear a strong resemblance to Basque names, and may sometimes be explained from Basque derivations. It is thought that the Basque race is connected with the anct. Iberian or Celtiberian, and was dispersed over the dists. named above. Some, however, deny the connection of the B. with the Iberi of the Romans, and make them an indigenous people who have never extended over larger regions than their present quarters. A third theory connected them with the fair-skinned African races, and would carry their origin back through some of the Berber tribes, through the anct. Libyans to a people represented on the Egyptian monuments. Lastly, may be mentioned a theory deriving them from the inhabitants of a lost Atlantic continent, represented also by the Guanches of the Canary Is., and by a certain fair-skinned W. African race. The B. themselves are fairer than the peoples of the S., but darker than the N. races. The race is by no means pure, and a large range of types is found. As in complexion, so in stature, they occupy an intermediate place between the N. and S. Europeans. Their skulls are both dolichocephalous and brachycephalous, and have certain peculiar characteristics. Collignon tells us that the Basque type differs from all those he knows of Europe and N. Africa. The B. know themselves by the name *Euskaldunak*, a word formed from the name of their language *Euskara*. The origin of this word is uncertain, but the most probable meaning is 'speaking plainly.' Their tongue stands alone among the languages of Europe, as the only remaining example of a consistent incorporative and agglutinative tongue. Though no close connection is to be traced, it shows affinity with the Finnic and Magyar families, which are simply incorporative, and the N. Amer. incorporative and polysynthetic languages. Morphologically, it occupies a position between these 2 groups, constituting a separate class. It is, as has been said, agglutinative, modifications of meaning and grammatical relations not being expressed either by prepositions or by inflections. Instead, there is a system of post-fixing, various additions being made one after the other. Thus, *zaldi*, 'horse'; *zaldia*, 'the horse'; *zaldiak*, 'the horses'; *zaldiaren*, 'of the

horse,' etc. There is a lack of general and abstract terms, though an abundance of particular terms. The personal pronouns, *ni*, 'I'; *hi*, 'thou'; *gu*, 'we'; *zu*, 'you,' bear a superficial resemblance to the Hamitic languages. Basque has no genders except in the verb, where a suffix is added to show the sex of the person addressed. Thus *eztakinat* means 'I do not know it, woman'; *eztakiat* (for *eztakikat*), 'I do not know it, man.' The verb incorporates with itself not only the pronoun, but also the direct and indirect complements. Thus there are separate forms for 'I give it,' 'I give it to you,' 'I give them to you,' etc., varying according to the sex of the person addressed. The regular verbal conjugations for the transitive and intransitive are now used but rarely, being reserved for the verbs 'to have' and 'to be' respectively. The language has, on the other hand, developed a conjugation by combining auxiliaries with the participles of all the other verbs. Thus instead of saying *dakust*, 'I see it,' the form is *ikusten dut*, 'I have it in seeing.' Originally, there were but 2 tenses, the present and the imperfect, but a conditional future has now been formed. There are no clearly defined moods. Syntax is simple, as in all agglutinative languages, and the phrases are short. Composition is used to such an extent that many phrases originally distinct have now become confounded. The dialects vary considerably, 25 in number, in 8 divs., which can be again reduced to 4 main dialects, those of Gulpuzcoa and Viscaya (Spain) and Labourdin and Souletin (France). The hist. of Basque literature is short as no ant. monuments remain. The first printed book in the language was the *Lingvæ Vasconum Primitiæ*, a collection of poems by Bernard d'Eschepare. Next to this comes the trans. of the N.T. by Licarrague, acting under the instructions of Jeanne d'Albret (La Rochelle, 1571), which ranks as the great classic of the language. Before the nineteenth century there existed no national literature, but attempts have been now made to form one. The few hundreds of vols. printed in Basque consisted chiefly of trans. from Fr., Sp., or Lat. The B. are of a religious nature, and their country has produced 2 great champions of the faith, Ignatius Loyola, founder of the Society of Jesus, and Francis Xavier, the great missionary. Most of their older literature, though no MS. exists older than the eighteenth century, is religious. Their legends and *pastorales*, a kind of open-air drama, are mainly derived from the Fr. The B. have ever shown the ability to retain their independence. Though the Roms. conquered them, they did not assimilate them in any way. The Visigoths did the same and no more. At the beginning of the tenth century the B. to the S. of the Pyrenees were brought into the kingdom of Navarre, but they still retained their *fueros*, or assemblies, in which they ruled themselves to a great extent. An unsuccessful attempt to abolish the *fueros* was made in 1832, but they were finally done

away with in 1876. The B. are engaged in agriculture and fishing, and many of them have emigrated to the Newfoundland cod-fisheries. Their great agility was remarked in the eighth century, and still remains a characteristic. They make excellent soldiers and sailors, and their ant. renown as pirates is continued by their success as smugglers. They are extremely conservative in dress, customs, and tradition. The dress of the men is simple, consisting generally of the knickerbockers, girded with a large red belt, open waistcoat, short tight coat, and carelessly tied kerchief round the neck, the whole surmounted by the national *beret*, a red or blue cap. Pelota (q.v.) is a popular game with the B. The number of B. in Europe is about 600,000 of whom about 125,000 are in France, and the rest in the Sp. provs. Of late years there has been a great deal of emigration, especially to S. America, where it is estimated that there are at present no fewer than 200,000 B. scattered over the Argentine Republic, Mexico, and Cuba. Under the republic (1931) the 3 Basque provs. formed the *Pais Vasco* with its own assembly. In the Civil war (1936-39) the Basque Gov. threw in its lot with the Republicans, but the B. were defeated by General Franco, and their country occupied in 1937 by the Nationalists (as General Franco's followers were then called). All their privileges and linguistic rights were suppressed. See under SPAIN—*Spanish Civil War*, 1936-39.

Bibliography.—LANGUAGE AND LITERATURE: W. Webster, *Basque Legends* (including Basque poetry), 1879; E. H. J. Vinson, *Essai d'une bibliographie de la langue basque*, 1891; H. Gavel, *Éléments de phonétique basque*, 1920; P. Lhande, *Dictionnaire basque-français et français-basque*, 1926-38; W. J. Entwistle, *Spanish Language* (with Basque), 1936. GENERAL: K. W. Fedden, *The Basque Country*, 1921; P. S. Ormond, *The Basques and their Country* (chiefly the Fr. provs.), 1925; R. Gallop, *A Book of the Basques*, 1930; T. C. Smith, *San Sebastian and the Basque Country*, 1935.

Basra, or Bassora, or Bussora: 1. A div. and liwa of Iraq and formerly a Turkish vilayet of Mesopotamia. The dist. of B. include also the liwas Amara and Muntafik, the total area being 53,580 sq. m. and the pop. (est. 1935), 783,000 (Basra, 286,000; Amara, 265,000; Muntafik, 232,000). 2. A city of Iraq, on the W. bank of the Shatt-el-Arab, the united stream of the Tigris and the Euphrates, in 47° 34' E., and 32° N., and the port of Iraq. It is surrounded by a wall 10 m. in circumference, and 20-25 ft. thick. Before the First World War B. did considerable transit trade between Turkey, the Persian dominions, and India, and after steamer communication with Bagdad and Bombay was instituted its prosperity considerably increased. After the war, notwithstanding difficulties incident to a newly created state, the trade continued to increase. Its chief exports are dates, wool, and barley; its imports textiles, sugar, tea, coffee, indigo, rice, etc. The settled pop. cannot

be estimated with any exactitude, as it is frequented by merchants and nomadic tribes, but according to the 1945 census it was slightly over 400,000. It has been the residence of a Brit. consul since 1898. The ruins of the anc. Bassora, formerly a centre of learning, founded by the Caliph Omar in 636, lie about 9 m. S.W. of the tn. The legendary tomb of Ezra, the prophet, is on the r. b. of the Tigris at some 15 hours' stonishing distance from B. It is a picturesque tomb in a setting of palm trees, and is annually visited by a large number of Jewish pilgrims from all parts of Iraq. During the First World War Britain found it necessary to occupy the ter. at

the Chaldees, Babylon, and Kish, there being special railway facilities for visitors to these places of great archaeological interest. There is also a steamship service for passengers and cargo between B. and Bagdad, and cars are available for motoring through Iraq and Persia. There is an airport and seaplane station. (See also Iraq.) In 1923, a modern automatic telephone system was brought into operation at B. and an up-to-date wireless station, equipped with thermionic transmitter. This station is in regular communication with Cairo and Beirut, and accepts commercial traffic from European countries, the Middle East, and America.



W. F. Mansell

BAS-RELIEF

A group from the Elgin Marbles, British Museum.

the head of the Persian Gulf in order to secure freedom of action in that area and to impress the Arab pop., and wharves and railway sidings were constructed for military purposes. An Indian div. was dispatched to the scene and arrived in Oct. 1914, but as soon as war was declared on Turkey in Nov. these troops were landed near the mouth of the Shatt-el-Arab. At this time Turkish forces were at B. and they were hurried down to oppose the Indian troops. The Turks were defeated and retreated hurriedly, and B. fell to the invaders on Nov. 21, 1914. For the remainder of the war B. was the base of operations in Mesopotamia. B.'s modern port installations were of great value to the Allies in the Second World War. It handled expeditiously the export of millions of tons of oil from the Persian oil-fields, and forwarded vast quantities of materials and arms to the Russian battle front. The Iraqi state railway system consists of a metre gauge line from the port of B., which is the port of Iraq, to Bagdad, a distance of 354 m. The main B.-Bagdad line runs through the anc. sites and remains thereon of Ur of

Bas-relief, or low-relief, term used to denote forms of sculpture which project very little from the background. The lt. terms *basso-rilievo*, *mezzo-rilievo*, and *alto-rilievo* were used at the time of the Renaissance according to the degree of projection from the surface forming a background. These terms fell out of use, and 'B.' became the general term to signify all 'relief' sculpture, as distinguished from sculpture in the round. The anc. Egyptians appear to have been the earliest people to practise this art, but the Persians, Assyrians, and Babylonians also represented their exploits and divinities in this way. The figures shown in these early Bs. are stiff and regular in outline. After the time of Crassus, the marble sarcophagi at Rome were usually decorated at the ends with B., many well-known legends being thus portrayed. The Elgin marbles in the Brit. Museum, which belong to the class formerly known as *alto-rilievo*, are the best anc. example of this class of art, whilst the Bs. of Donatello, Canova, Flaxman, and Thorwaldsen were noted in later ages. **Bass** (lt. *basso*, low) is a musical

term denoting the lower part in the harmony of a composition, the lowest pitched of a class of instruments, or the lowest male singing voice. The B. part is only surpassed by the melody in the freedom of its movements and the richness of its effect. It contains more frequently the fundamental notes of the chords, and the 'organ-point' is formed on it. The ordinary compass of the B. voice is from F below the stave in the B clef to D above it. Mozart gave it great prominence in opera as a solo part.

Bass, or **Basse**, name applied to any perch-like fishes of the sub-order Acanthopterygii. The Eng. varieties are marine, while the Amer. comprise sev. fresh-water fish. The common bass of the family Serranidae is known as *Labrax lupus*, receiving its specific name from its wolf-like voracity; it is common to the Mediterranean. Two species of black B. afford sport for Amer. anglers; they are the *Micropterus salmoides* and *M. dolomieu* of the sun-fish family, Centrarchidae. Nearly all B. are edible.

Bass, term for the inner bark of a lime-tree; hence the word is applied to certain articles made of fibre, such as a hassock, basket, or door-mat. The word is common in Scotland, where it is used chiefly with regard to door-mats.

Bass Clef, see CLEF.

Bass, Double, see DOUBLE BASS.

Bass, Figured, see THOROUGH BASS.

Bass, Fundamental, see FUNDAMENTAL BASS.

Bass, George (d. 1812), Eng. explorer, b. at Asworthy, Lincolnshire. He was apprenticed to a surgeon at Boston, Lincolnshire; joined the navy and became surgeon to H.M.S. *Reliance*. In 1795 he sailed to Australia, and explored the coast of New S. Wales and Tasmania with Flinders, 1795-1800. B. Strait owes its name to him.

Bass, Great and Little, 2 ledges of rock off the coast of Ceylon in the bay of Bengal. Both have lighthouses.

Bass, Ground, see GROUND BASS.

Bass, Michael Thomas (1799-1884), was son of J. M. B. of the brewing firm of Burton-on-Trent. He acted as traveller for the firm at first. He sat in Parliament as a Liberal, 1848-83. He declined a baronetcy and a peerage, both of which were afterwards conferred on his son M. A. Bass.

Bass, Thorough, see THOROUGH BASS.

Bassadore, see BASIDU.

Bassandynne, Bassendynne, or **Bassinden**, **Thomas** (d. 1577), Scottish printer, book-binder, and bookseller at the Nether Bow, Edinburgh. He printed the earliest trans. of the N.T. produced in Scotland in 1576, and also an ed. of Lindsay's works. See Dobson, *History of the Bassandynne Bible*, 1887.

Bassano, city in the prov. of Vicenza, Italy, on the R. Brenta. The bridge over the riv., 180 ft. long, was built by Palladio, as was also one of the 6 gates in the walls surrounding the tn. In the centre of the tn. is the tower of Ezzelino, which now contains an armoury and a library; the 35 churches of the city contain some fine

paintings. The vine and the olive are cultivated, and there are extensive silk mills, and manufs. of cloth, paper, porcelain, straw hats, and wax. On Sept. 8, 1796, Bonaparte defeated the Austrian general Wurmsers near B., and Murat derived the title of duke of B. from the city in 1809. In the Second World War the anct. cathedral sustained slight damage to the windows; the cloisters of S. Francesco suffered direct hits; the wooden Ponte Vecchio (old bridge) was blown up by partisans; and the Palazzo Ezzelini was slightly damaged. Pop. 17,000.

Bassano, commonly called **Giacomo da Ponte** (1510-92), It. painter. He was sent by his father to Venice to study the Venetian school of painting. His work met with success, and Tasso and Ariosto sat to him for their portraits. His best works are the 'Entombing of Christ' at Padua, and the 'Seizure of Christ.' He had 4 sons: (1) Francesco, commonly called the younger B. (1548-91), studied under his father, and achieved considerable reputation, practising at Venice. In a fit of delirium he threw himself out of a window and was killed. (2) Giovanni (1553-1613), known as a copyist of his father's work. (3) Leandro (1558-1623), distinguished himself as a portrait-painter, but painted historical and sacred subjects occasionally. (4) Girolamo (1560-1622), employed by his father in copying, but contributed an original piece of 'St. Barbara and the Virgin' at Bassano.

Bassantini, or **Bassington, James** (d. 1568), Scottish astronomer, educated at Glasgow, and afterwards travelled, but finally settled in Paris, where he taught mathematics and astronomy. He wrote works on mathematics, astronomy, and arithmetic, some of which are now only known by the titles which have been recorded. One of his works which was best known was a *Discours astronomique*, Lyons, 1577, which appears to have been trans. into Lat. by de Tournes (Torne-sius) under the title of *Astronomia J. Bassantini, Scotti*, Geneva, 1559, reprinted 1613. His planetary system is that of Ptolemy.

Basse, or **Bas, William** (c. 1583-1653), Eng. poet. He was a retainer of Sir Richard Wenman of Thame Park, Oxfordshire. He wrote on country life; the author of *Sword and Buckler*, 1602; *Great Brittaines Sunnes-set*, 1613. He is remembered for his epitaph on Shakespeare, and for a song quoted in Walton's *Compleat Angler*.

Bassedau, Johann Berend, see BASEDOW, JOHANN BERNHARD.

Bassée, La, a tn. in Pas-de-Calais, France, near Lens. It occupied an important strategical position in the operations on the W. front in the First World War, figuring repeatedly in the official communiqués in the course of the great battle of Flanders or, in Brit. nomenclature, the first battle of Ypres, in Oct. 1914, when the allied line ran along the Yser and through Ypres, L. B., and on to Arras. The Bavarian crown

prince, after some five days' fighting, succeeded in advancing from L. B. to Neuve Chapelle, but that point proved to be the limit of the Ger. advance. Pop. 34,000.

Bassein, seaport of Lower Burma, and cap. of the dist. of B., on the riv. of that name. Prin. export is rice, and, coal, salt, cotton goods, etc., are imported. Pop. 37,000.

Bassein, tn. in the presidency of Bombay, India, 28 m. N.E. of Bombay. It was ceded to the Portuguese by the king of Gujarat in 1534, and remained in their possession until taken by the Mahrattas in 1739. It was taken over by the Brit. in 1818. Pop. 9600.

Basses-Alpes, see ALPES, BASSES-
Basses-Pyrénées, see PYRÉNÉES, BASSES-

Basset, Fr. breed of medium-sized hound with a long body, short crooked legs, and heavy head, which was introduced into England for the first time in the early seventeenth century. It was formerly used in the baiting of badgers, but is now employed in deer-hunting and in hare-hunting, in which it shows its persevering but slow nature. There are both smooth and rough-haired varieties, but the colouring is usually tan on the head and black and white on the body.

Basse-terre: (1) Seaport of the W. Indies, on the S.W. coast of the is. of St. Christopher, of which it is the cap. Pop. 12,000. (2) Cap. of Guadeloupe. Pop. 13,600.

Basset Horn (It. *corno di bassetto*), wind musical instrument invented in Germany in 1770. It is similar to a clarinet in fingering, but contains additional low notes. The scale embraces nearly 4 octaves, from C, the second space in the bass, to G in altissimo, including every semitone; but its real notes, in relation to its use in the orchestra, are from F below the bass staff, to C, the second ledger line above the treble. 'Corno di Bassetto' was an early pseudonym of G. Bernard Shaw.

Bassett, John Spencer (1867-1928), Amer. historian, b. at Tarborough, N. Carolina, U.S.A. Educated in N. Carolina and specialising in hist. he became prof. of Amer. hist. at Smith College, Mass., from 1906 to 1914, when he became head of the hist. dept. at the same institution, holding this post until 1921. He wrote many books dealing with the hist. of his native state and, in addition, the following: *The Life of Andrew Jackson*, 1911; *A Short History of the United States*, 1913; *Our War with Germany*, 1919; *The Lost Fruits of Waterloo*, 1919; *The Life of Martin Van Buren*, 1926.

Bassia, genus of tropical plants of the order Sapotaceæ found chiefly in India. *B. butyracea*, the Indian butter-tree, grows to a height of 50 ft., and its seeds yield a fat-like substance akin to vegetable butter. *B. longifolia*, the Indian oil-tree, has a yellowish fruit which gives valuable oil for lamps and soap, and is used in cookery by poor Indians. The flowers are fleshy and edible, the wood is hard and durable as teak. *B. latifolia*, the mahua, mahwa, or mowa, has hard

and strong wood, and the flowers yield by distillation a strong intoxicating spirit. *B. pallida* produces a gutta-percha.

Bassières, Jean Baptiste, Duke of Istria (1768-1813), Fr. marshal. In the Constitutional Guard of Louis XVI. he took part in the Sp. war. He won honour in the E. Pyrenees and the Moselle. In 1796 he served under Napoleon as captain during the It. campaign. A distinguished career saw his return with Napoleon from Acre and Aboukir, when he was second-in-command of the Consular Guard. He was made marshal of France in 1804, and was created duke of Istria 5 years later.

Bassigny, dist. in the former prov. of Champagne, France, now forms parts of the depts. of Haute-Marne, Meuse, and Aube. Its chief tns. were Langres, Chaumont, and Bourbon-lès-Bains.

Bassinden, Thomas, see BASSANDYNE, THOMAS.

Bassington, James, see BASSANTIN, JAMES.

Basso Continuo, It. for thorough-bass (q.v.).

Basso di Camera, a double bass, or contra bass, reduced in size and power but not in compass. It has 4 strings, 2 of gut and 2 covered with silver wire, all proportionately thicker than those of the violoncello, and tuned in fifths, to the same literal notes as the violin, but 2 octaves lower than the latter.

Bassompierre, François de (1579-1646), marshal of France and cap.-general of the Swiss Guard, b. in Lorraine of a noble and military family; became a favourite of Henry IV.; took part in the civil wars (mostly of religious origin), appointed cap.-general of the Swiss Guards; under Louis XIII. ambas. to Spain; 1626 sent to England by Richelieu to enforce the marriage treaty between Henrietta Maria and Charles I. in so far as it related to toleration of Rom. Catholic worship. Supported Marie de' Medici against Richelieu, at whose instance he was arrested and sent to the Bastille for 12 years; released at Richelieu's death; d. of apoplexy 3 years afterwards. See *Mémoires du Maréchal de Bassompierre*, 1723; *B.'s Embassy to England*, 1819.

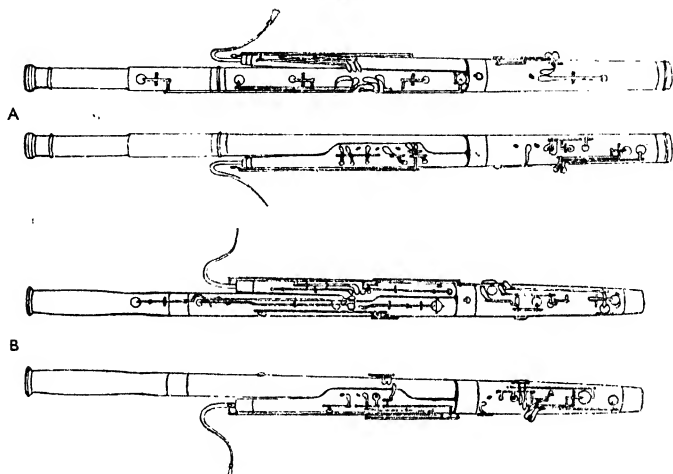
Basso Narok, see RUDOLF LAKE.

Bassoon (Fr. *basson*, Ger. *Fagott*, It. *fagotto*), wood-wind instrument with a double-reed mouthpiece, forming the bass of the oboe family. Its direct ancestor was the bass pommer, which was straight and 6 ft. in length; the tubes of which the B. is formed resemble a bundle, hence the Ger. and It. names for the instrument. It consists of 5 pieces, joined together into a wooden tube 93 in. long, which has a conical bore tapering from a diameter of 1½ in. at the bell to ¾ in. at the reed. The pieces are known as the bell, the long joint, the wing, the butt, and the crook, to the last of which the mouthpiece is attached. The performer holds the instrument in a diagonal position, passing its strap around his neck; the notes are produced by 7 holes, and 16, 17, or 19 keys. The mechanism and fingering are intricate. From an acoustic point of

view the B. is badly constructed, but in practice it affords the artist a scope surpassed only by the stringed instruments. Its compass comprehends 3 octaves, rising from B flat below the bass staff. It has been a favourite instrument with all the masters save Handel, sev. having written concertos for the B., with orchestra. The range of the *double B.* is roughly an octave below that of the B. The double B. was introduced into England by Handel. It is not much employed and, unlike other members of the oboe family, it has never reached a standard form.

them honourable terms. The fort was demolished in 1701. The rock is now private property, being farmed for the sea-fowls that breed there.

Bass Strait, sea channel, 140 m. wide and 180 m. in length, separating Australia and Tasmania. It is studded with is., chief of which are King Island and the Furneaux Islands (*q.v.*), included in the state of Tasmania. Navigation is difficult as a result of the numerous coral reefs. The strait was discovered in 1798, and named after George Bass (*q.v.*).



A, Modern French.

BASSOONS

B, Modern German.

Bassora, *see* BASRA.

Bassora Gum, name given to a gum derived from plum and almond trees, and often used to adulterate gum tragacanth; came originally from Bassora or Basra.

Basso-rilievo, *see* BAS-RELIEF.

Bass Rock, conical insular rock at the mouth of the frith of Forth, 3 m. from N. Berwick. It is about a m. in circumference, and rises to a height of 315 ft. It has an imposing aspect, with its precipitous lofty walls; a cavern runs from the N.W. to the S.E., which is explorable at low tide. It is inaccessible save on one shelving point on the S.E. side. Purchased by the Eng. Gov. in 1671 from the Lauder family, the castle was converted into a state prison, in which sev. eminent Covenanters were confined. The rock was held for King James II. by 16 Jacobites (4 of them former prisoners on the rock) against a small army of King William III. After a siege of 3 years (1691-94) the plucky but diminutive garrison were compelled to surrender from starvation. Their resistance secured

Bass Tuba, another name for the B. saxhorn in F or E flat. It is sometimes applied to the euphonium.

Bass Viol, or *Viola da Gamba*, the bass instrument of the viol family. It had six strings. The name B. V. was often given to its successor, the violoncello.

Bassus, genus of hymenopterous insect of the family Braconidae. They are closely allied to the ichneumon flies, have 4 wings, long and narrow bodies, and frequent the flowers of umbelliferous plants.

Bast, in its 2 forms soft and hard, constitutes what is known in botany as phloem. The soft B. consists of sieve-tubes, companion-cells, and parenchyma cells, and the sieve-tubes are employed in carrying food material from the leaves to the rest of the plant; the hard B. is composed of long, narrow B. fibres resembling wood fibres, and parenchyma cells. In commerce the B. fibres of flax, hemp, and jute are sold for various purposes.

Bast, Friedrich Jakob, Ger. scholar. b. in the state of Hesse-Darmstadt, c. 1772. He afterwards studied in the univ. of

Jena, under Profs. Griesbach and Schutz. His first literary essay was a commentary upon Plato's *Symposium*, which was followed in 1796 by a specimen of an intended new ed. of the letters of Aristænetus. B.'s literary labours were devoted to verbal criticism.

Basta, Georg, Baron von Sult (1550-1607), Austrian general, *b.* at Rocca, S. Italy. He served under Alexander Farnese in the Low Countries, 1589-90, and occupied Transylvania in 1598. In 1603 and 1604 he suppressed risings which were due to his rapacious and cruel administration.

Bastan, *see* BAZTAN.

Bastar, or **Bustar**, feudatory state of the Central Provs. of India. The R. Indravati traverses it, there are many hills and forests and some dense jungle, and the whole dist. is unhealthy and ill populated. The cap. is Jagdalpur, and the pop. of the state 500,000, chiefly Hindus and aboriginal tribes of Gond origin. These latter tribes worship the deities of the Hindu pantheon, along with their own national goddess, Danteswari.

Bastard, person *b.* out of lawful wedlock and (where allowable) not subsequently legitimated. By the Eng. law a child *b.* during the marriage of his parents is legitimate, even if the child is begotten out of matrimony. The fact of birth during marriage or within a certain time after the husband's death raises a strong presumption of legitimacy, rebuttable only by proof of non-access on the part of the husband. By the Scottish law and most continental systems, which are based on the canon and civil laws, a *B.* may be legitimised either by the subsequent marriage of his parents, or by special dispensation not affecting the rights of third parties. In 1926 the Eng. law was assimilated to the Scots law by the Legitimacy Act of that year, under which an illegitimate child can become legitimate on the subsequent marriage of the parents, provided at the time of birth both were free to marry. The father of a legitimated child must, at the time of the legitimating marriage, be domiciled in England or in Wales. The rights of succession to property acquired by legitimization are, however, confined to dispositions made after legitimization took place. Civilly the *B.* is *filius nullius* for most purposes, and is therefore heir to none of his reputed ancestors and entitled to no share of the personal property of his reputed parents if they die intestate. Nor has he a surname until he acquires one by reputation. But Eng. law admits a *B.* to be the son of his putative father and his natural mother for purposes of maintenance. A *B.* takes as his primary settlement for public assistance purposes the place where he was *b.* but a legitimate child takes his father's *bp.* The Eng. law relating to the maintenance of *Bs.* is to be found in a number of statutes, the nature of the changes in the law indicating that no settled principle has regulated our legislation on this subject. By the Bastardy Laws Amendment Act, 1872, the mother of a *B.* may summon the

putative father before petty sessions within 12 months after the birth of the child, or at any later time if he is shown to have contributed to the child's support within 12 months, and the justices, on the mother's evidence being corroborated, may adjudge the man to be the putative father and order him to pay a weekly sum for its maintenance. Such order becomes invalid after the child attains 16. An appeal lies to quarter sessions. The mother only may apply for such an order, though in case of her death or incapacity or omission to apply before the child becomes chargeable to the poor rate, the public authority concerned may proceed against the putative father. The custody of a *B.* belongs to its mother in preference to the putative father.

Bastard Bar is a name sometimes employed erroneously in speaking of the baton sinister (*see under* BATON).

Bastard Palm, *see* MELITTIS.

Bastardy, Declarator of suit which holds in Scottish law for the disposal of the effects of a deceased illegitimate child. The recipient of the estates must receive a deed of gift from the Crown to state that he is entitled to them, and the defender is represented by any person or persons who could pretend to heirship if the owner had been *b.* in wedlock.

Bastennes, Fr. vil. in the dept. of Landes. It is noted for its rich asphalt mine and 2 mineral springs.

Basti, or **Busti**, *tn.* of the United Prov., India, 115 m. from Lucknow; pop. 11,500.

Bastia, *tn.* and seaport on the E. coast of the is. of Corsica, 95 m. N.E. of Ajaccio, the present cap. *B.* was formerly the cap., and still has the chief trade, mainly in soap, leather, liqueurs, and wax. Pop. (1940) 53,000.

Bastian, **Adolf** (1826-1905), Ger. traveller and ethnographer, *b.* at Bremen. He was educated as a physician, but in 1851 he started on the first of his many voyages. This first voyage lasted for 8 years, and he travelled round the world. Between 1864 and 1866 he visited the Indian Archipelago and Japan, the desert of Gobi, the Ural and Caucasus Mts., and the Caspian and the Black Seas. He was created prof. of ethnology and administrator of the ethnological museum at Berlin, and later was president of the Berlin Anthropological Society. He organised the station of Chinocho on the coast of Loango, and completed the ethnographical collections of the Royal Museum at Berlin. Between 1875 and 1891 he undertook journeys to Oceania, Central and S. America, and from central Asia to America. He wrote numerous standard books on ethnology and anthropology, his chief work, *The Peoples of Eastern Asia*, being pub. in 1866-71.

Bastian, **Henry Charlton** (1837-1915), Eng. biologist and physician, *b.* at Truro. He was educated at Falmouth and at Univ. College, London. He was assistant curator in the univ. museum 1860-63, and 1864-66 head officer in Broadmoor Criminal Lunatic Asylum. In the latter year he was appointed lecturer on pathology and assistant physician at St. Mary's

Hospital, in 1875 prof. of pathological anatomy at Univ. College, and 1887-95 prof. of medicine and clinical medicine. His more important works include: *Modes of Origin of Lowest Organisms*, 1871; *Evolution and Origin of Life*, 1874; *Brain as an Organ of Mind*, 1880. He advocated the theory of spontaneous generation.

Bastiat, Claude Frédéric (1801-50), Fr. economist, b. at Bayonne. Educated at Saint-Sever and Sorèze colleges, and in 1818 entered the counting-house of his uncle. In 1825 he retired to a property at Mugron, of which he became the owner on the death of his grandfather. Here he passed his time in farming and study until the revolution of 1830, which he welcomed. He became a *juge de paix* for his canton in 1830, and in 1832 a member of the General Council for the Landes. He followed the progress of Cobden's Anti-Corn-Law League, and formed a parallel association in France. After the revolution of 1848 he was elected to the constituent and legislative assemblies. He d. at Rome, Dec. 24, of a lingering disease. His pamphlets against Socialism and Protection are considered to be masterly; his great economic work was cut short by death.

Bastide, Jules (1800-79), Fr. politician, b. in Paris. He studied the law, but after a time became a timber merchant. He was a member of the Fr. Carbonari, and took part in the revolution of 1830. He was given an artillery command in the National Guard after the 'July days,' but for his share in the riot on the occasion of General Lamarque's funeral in 1832 he was sentenced to death, and fled to London. He was acquitted on returning to Paris in 1834, and after founding the *Revue nationale* in 1847 with P. J. Buchez, he became minister of foreign affairs in 1848.

Bastide-de-Claurance, tn. of Basses-Pyrénées dept., France, 13 m. S.E. of Bayonne. It has copper and iron-mining industries. Pop. 2000.

Bastide-de-Serou, tn. of Ariège dept., France, 9 m. N.W. of Foix. The chief industry is the making of glass-melting pots, for which yellow and grey clay is found in the neighbourhood. Pop. 1600.

Bastien-Lepage, Jules (1848-84), Fr. painter, b. in the vil. of Damvillers, in the Fr. dept. of Meuse, on Nov. 1. In 1867 he went to Paris to the École des Beaux-arts, where he studied under Cabanol. He exhibited in the Salons of 1870 and 1872, but without any conspicuous success. In 1874, however, his 'Song of Spring,' a study of rural life, attracted attention, and his succeeding pictures estab. his fame. In 1874 he gained a third-class medal with his 'Portrait of my Grandfather,' and in the following year his picture 'Angels appearing to the Shepherds' gained the second Prix de Rome. His picture called 'The Hayfield,' which he first exhibited at the Salon of 1877, and which is now in the Luxembourg, is a typical example of his truthful and simple style. He was now recognised as the leader of a school, and he gained the cross of the Legion of Honour in 1879 by his portrait of Mme

Sarah Bernhardt. He exhibited in the Royal Academy of 1880. His health, which had been failing him ever since he served under the painter Castellani as a *franc-tireur* in the war, broke down, and he went to Algiers to recuperate. He grew worse, however, and returned to Paris, dying on Dec. 10. See study by G. Clausen, with memoir by A. Theuret, 1892.

Bastille, Fr. name for any castle with towers, but as a proper name it signifies the old state prison and citadel of Paris. This was built about 1370 by Charles V., but came to be used as the place of confinement for persons of rank or political importance. It was cordially detested by the populace as an emblem of tyranny. The capture of the B. on July 14, 1789, was the commencement of the Fr. Revolution. The mob, after attempting to negotiate with the governor, Delaunay, attacked it, and by the help of artillery captured it. Delaunay was lynched as he was being taken to the *Hôtel de ville*, and the B. was completely destroyed by the mob. A column in the Place de la Bastille now marks its site.

Bastinado (Sp. *bastón*, cudgel), European name for an oriental form of punishment which consists in inflicting blows with a stick upon the victim, generally on the soles of his feet, sometimes on his back.

Bastion (Fr., from It. *bastione*), in fortifications, is a mass of earth which stands out from the rampart of which it forms the main portion. Bs. are faced with turf, or stone, and consist of 2 flanks, which serve to protect the neighbouring Bs., and 2 faces, which meet in an angle towards the enemy, and command the outworks and the ground in front. The fifth side, which is open to the interior, is known as the gorge.

Bastwick, John (1593-1654), Eng. physician and religious zealot, b. at Writtle, Essex. Opposed to Rom. Catholic ceremonial, he incurred the anger of Iaud by his *Elenchus Religionis Papistice* and *Flagellum Pontificis et Episcoporum Latialium*, which were ordered to be burnt. B. was fined and imprisoned. For later works he was fined £5000, pilloried and had his ears cut off, and was sentenced to imprisonment beyond the seas. These proceedings were reversed by Parliament in 1640.

Basurhat, or Bussirhat, tn. of Bengal, 30 m. from Calcutta; pop. about 15,000.

Basutoland, African native ter. in the E. of S. Africa, bounded on the N. and W. by the Orange Free State, on the S. by Cape Province, and on the E. and N.E. by Natal. The surface is mountainous, and the average height above the sea is 6000 ft. The Maluti Mts. and the Molappo Mts., which are parallel to the Quathlamba Range, divide the country into 3 almost equal dists.; the headwaters of the Orange R., the Tugela R., the Komet Spruit, the Caledon R., and the Senka R. lie in B. The Maletsunyane Falls (660 ft.) are the twelfth highest waterfalls in the world. The climate is healthy and invigorating, but cold in winter, and the average rainfall is about

32 in. per annum, most of it falling in the summer. B. is the best grain-producing country in S. Africa, and maize, Kafir corn, and wheat are grown over an area of some 730,000 ac. The ponies of B. are hardy and sure-footed, whilst sheep and cattle are also reared in large numbers. Mule-breeding has been introduced. The chief mineral is coal; iron and copper are also present. Considering the mountainous nature of the country, the roads



RASUTO

A typical policeman

are good, but there are no railways, except for a line that crosses the W. border to connect Maseru with Bloemfontein. Wool, mohair, cattle, and hides are the chief exports, also wheat, and Kafir corn. There are few forests, and much of the country is uninhabitable. Whites are not allowed to settle without special permission. The natives are intelligent, industrious, and brave. The area of B. is 11,716 sq. m., and pop. (1936 census) is 562,300 (natives, 559,300; whites, 1400; Asiatics and others, 1600).

History. The Basuto of Basutoland are commonly believed to have been the remnant of a number of tribes which were dispersed by the wars waged by Mosellkatze, king of the Matabele, in the early part of the nineteenth century. Their earliest ruler was Moshesh or Moshoshoe,

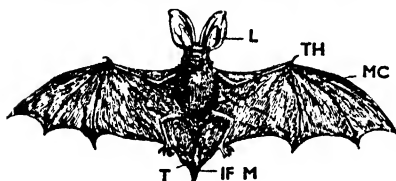
who welded his dispersed tribesmen into a political unity. Moshesh is the Basuto national hero, and Thaba Bosiu or Bosigo was the scene of his triumph against the Zulus and others. No other spot in B. carries so much of the hist. of the nation as this small mt. where Moshesh first took his stand against his foes, and where all the paramount chiefs of the past lie buried. Thaba Bosiu, which still shows the remains of its old fortifications, rises abruptly from the plain, crowned with waves of sand, and is scaled by a few zigzag paths from a ravine. Here, in July 1827, Moshesh defeated the Aman-gwate Zulus; in the critical moment of the battle the Matlana regiment, led by Moshesh himself, fell on the enemy's flank and hurled them down the ravine. In 1852 war broke out between Moshesh and the Brit., and the Basuto were defeated by Sir G. Cathcart at the battle of the Berea Mountain, Moshesh making his submission. Boundary disputes with the Orange Free State arose in 1856, and the hostilities which accompanied the dispute only ended with the treaty of Aliwal in 1858. Seven years later war again broke out between the Basuto and the Boers, and Moshesh sought the protection of the Brit. gov. Sir Philip Wodehouse, while declining to intervene, sent a Brit. commissioner to Thaba Bosiu, the Basuto cap., to adjust the difficulties, but without success, and, in the end, Moshesh had to sue for peace from the Boers. In 1866 he ceded part of his ter. to the Boers, and acknowledged himself to be a subject of the Orange Free State. War again re-occurred and the Basuto again appealed to be taken under the authority of the Brit. Crown. In 1868 Wodehouse was authorised to recognise Moshesh and his people as Brit. subjects and to incorporate their ter. as a Brit. possession. A proclamation to that effect was issued on Mar. 12, 1868, which day is commemorated as a public holiday, 'Moshoeshoe's Day.' The country remained, however, in a very unsettled state until in 1871 it was annexed to Cape Colony by an Act of the Cape Legislature, but was not made subject to the general law of the colony. The Basutoland Disannexation Law of 1883 brought the ter. under the immediate authority of the Crown, and so it has remained, being governed by a resident commissioner under the direction of the high commissioner for Basutoland, Bechuanaland, and Swaziland. In 1891 B. became a member of the Customs Union. No disturbances occurred during the Boer war. B. is not included in the Union of S. Africa, on which, however, it is economically dependent, and suggestions made from time to time by S. African politicians that the Basutos should throw in their lot with the Union have so far fallen on unresponsive ears, although a clause in the Act of Union makes provision for the possible future inclusion of all High Commission Territories. In the First World War the Basuto offered to raise fighting regiments, an offer that was, however, declined. They voluntarily raised £50,000 for

presentation to King George V., who, in 1919, was visited by Griffiths Leretholi, then paramount chief of the Basuto. In the Second World War, besides raising a fund for the purchase of a Spitfire Squadron, Basuto to the number of 10,000 formed part of the African Auxiliary Corps, which served in the Middle East. Basuto pioneers in this corps served in Italy where they carried supplies for the Fifth Army on the Salerno front, and laid tank tracks. Others served in the Army Fire Service at Beirut. Seciso Griffiths, great-great-grandson of Moshesh, became paramount chief in 1940, but *d.* the same year. His son, Bereng, the future chief, was *b.* in 1937.

See the standard hist. by Sir G. Lagden, *The Basutos*, 2 vols., 1909; also D. F. Ellenberger, *History of the Basuto*, 1912; E. A. T. Dutton, *The Basuto of Basutoland*, 1923; Sir Alan Pim, *Report on the Financial and Economic Position of Basutoland* (I.L.M.S.O.), 1935.

Basyl, or **Basyle** (Gk. *βάσις*, base, *ἄλγ* matter), name formerly in use to indicate a metal or group which acts as a base.

Bat, or (popularly) **Flittermouse**, or **Reermouse**, mammal of the order *Chiroptera*, nearly related to the *Insectivora* (hedgehogs, shrews, etc.), but differing from them in having the power of bird-like flight. The fore-limbs are greatly developed, and between each of the 4 fingers is a skin expansion which extends to the side and the hind legs; another expansion spreads from the tail to the hind legs. The thumb does not share in the flight-modifications, and is clawed, its uses being those of attachment and occasional efforts to walk. The shoulder girdle and breast-bone are large, the latter extended to a keel, while the pelvic girdle is small.

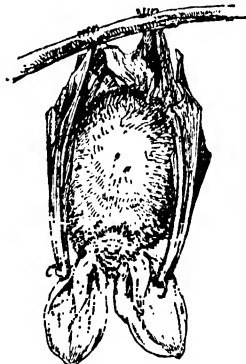


BAT

L, tragus; TH, thumb; MC, metacarpal; IFM, interfemoral membrane; T, tail.

The bones of the limbs have large medullary cavities, but other bones are slight, and the ribs are flattened. The females have either 1 or 2 pairs of thoracic mammae, and give birth usually to a single offspring, which they carry with them during flight and which are *b.* blind. The visual sense in the fully grown *B.* is strong, contradicting popular opinion, while the senses of smell, taste, and hearing are present to a large degree. *Bs.* are highly sensitised, the membranes of the nose and the wings being filled with numerous nerves in addition to blood-vessels; the experiments of Abbé Spallan-

zani in 1775 proving that *Bs.* deprived of sight and hearing are yet able, in a room across which have been stretched a number of strings, to fly without coming into contact with one of them. Many have curiously shaped fleshy appendages called nose-leaves round the nose and mouth, and these are peculiarly sensitive. The ears of all *Bs.* are large, prominent, and mobile. *Bs.* inhabit all parts of the globe except the coldest regions, but



LONG-EARED BAT

abound in the tropics. In habit they are nocturnal, sleeping during the day head downwards, holding to some object with their curved claws. They hibernate in belfries, caverns, and forests, and in some cold climates, such as that of Canada, they migrate to warmer places for the winter season. At twilight they search for food, which in most species consists of insects, in others of fruit, and in a minority of the blood of mammals. They are classified according to the food they eat into *Megachiroptera*, or frugivorous forms, and *Microchiroptera*, or insectivorous forms. To the first class belong the *Myotis* *edulis*, or flying fox, the largest known species, which sometimes measures 5 ft. across the wing; *Epomophorus* of Ethiopia; *Cynonycteris* of the Egyptian pyramids. To the second class belong the genera *Rhinolophus*, or horse-shoe *B.*; *Nycterus*, or leaf-nosed *B.*; *Megaderma*, of which *M. lyra*, the lyre-bat, attacks other *Bs.*, frogs, and small mammals, and sucks their blood; *Vespertilio*, the common naked-faced *B.* of most countries; *Vesperugo*, of which *V. pipistrellus*, the pipistrelle, is well known; *Synotis*, of which *S. barbastellus* is the barbastelle. There are in all nearly 100 genera of *Bs.* and among others should be mentioned the true vampires, or blood-suckers; these belong to the *Desmodus* and *Diphylla*, and will attack even men and horses; the genus *Vampyrus*, to which the repulsive *V. spectrum* is attached, consists strangely enough of frugivorous and insectivorous animals. In Britain there are a dozen species of *Bs.*, contained in seven genera.

The power of Bs. to detect and avoid obstacles when flying in the dark has recently been reinvestigated. Contrary to Spallanzani's results mentioned above, it is now known that the ears form an essential part of the mechanism. Squeaks pitched so high as to be inaudible to the human ear are emitted through the B.'s mouth or nose. Each squeak, which is of very short duration (2/100 sec. or less), produces an echo when it is reflected from an obstacle. The echo is received by the ears, and the interval from the time of emission of the squeak indicates the distance of the obstacle; the longer the interval, the greater the distance. The process has been termed echo location, and resembles the echo sounding device used on ships to determine the depth of the sea. It is paralleled by the use of electromagnetic ('wireless') waves in radar. Some blind humans appear to have similar powers of echo location. See Barrett-Hamilton's *History of British Mammals*, vol. 1, 1910; *Catalogue of the Mammals in the British Museum*, 1912; also the vol. on *Mammalia* by F. R. Beddard in the *Cambridge Natural History*, 1902. For echo location see *Nature*, clvi. 490 (1945), and clviii. 46 (1946).

Bataan, prov. of Luzon, Philippine Is., on the W. of the bay of Manila; pop. 65,000. The defence of B. Peninsula by U.S. forces under Gen. MacArthur against the Jap. armies from Jan. to Apr. 1942 will go down in hist. as a great military exploit. It shed undying lustre on Amer. and Filipino arms, and gained valuable time for the Allies. Gen. MacArthur was assisted by 2 Amer. senior officers, Maj.-Gen. Jonathan Wainwright and Brig.-Gen. Albert M. Jones, the former taking command after Gen. MacArthur had flown to the defence of Australia. The defence of B. Peninsula, besides shattering illusions about the invincibility of the Jap. Army and Air Force, against the immense preponderance in men and equipment which the Jap. enjoyed here, held up at a most critical juncture in the war other very large Jap. naval, military, and air forces which could otherwise have been used much earlier against Sumatra, Java, or other important positions held in the allied cause. It gave time for recovery of Amer. naval strength after the disaster of Pearl Harbour, and for the re-grouping of Brit. naval and air forces; and it was a serious setback to the Jap. strategical plan of rapid action and shock tactics. Off the S. point of the peninsula and in the entrance channel to Manila Bay lies the small rocky is. of Corregidor. This is., which was well fortified with 16-in. guns, was the last Amer.-Filipino position to fall. See also PACIFIC CAMPAIGNS IN SECOND WORLD WAR.

Batac, or **Batag**, tn. of Luzon, Philippine Is., in the prov. of Ilocos Norte, near Laoag. It is situated in a fertile dist., and has sugar factories. Pop. 20,000.

Bataille, Henri (1872-1922), Fr. dramatist. Studied painting at the Ecole des Beaux Arts, Paris, but was so successful

with his first vol. of poems, *Le Beau Voyage* (1905) that he gave up painting for literature. Turning to drama he produced a successful play, *La Lépreuse*, in 1896, and enhanced his international reputation with *Maman Colibri* (1904), *Le Scandale* in 1909, and, later, with *La Vierge folle* (1910), *Les Flambeaux* (1913).

Bataks, see BATTAS.

Batala, or **Butala**, tn. of the Amritsar dist. in the div. of Lahore, India; pop. 27,000.

Batalha, tn. in Estremadura, Portugal, 7 m. from Leiria. It contains a famous Dominican convent, and received its name from King John I.'s victory at Aljubarrota in 1385. Pop. 4,000.

Batan, seaport of Panay Is. in the Philippines. Pop. 14,500.

Batang, or **Battam**, is. opposite Singapore, in the Malay Archipelago.

Batang, China, see BAAFU.

Batangas, tn. of Luzon, Philippine Is., cap. of the B. prov., and 58 m. S. of Manila. A well-built tn., it was founded in 1581, and contains a palace, the residence of the alcade. It has a considerable trade in native produce with Manila. The prov. itself is mountainous in character. The pop. of the prov. is about 345,000; of the tn., 50,000.

Batara, name given by D'Azara to the bush shrakes which form the genus *Thamnophtilus*. They come from S. and Central America, and belong to the family Formicariidae. The males are usually black above, whitish-brown beneath, and in length do not exceed 13 in. *T. navius* has a rounded and comparatively short tail; *T. vigorosus* has a large reddish crest, blackish at the apex.

Batatas, genus of Convolvulaceae, now included in *Ipomoea* (q.v.), found in warm countries. The name is from *batata*, Sp. form of a Haitian word, and the plant is a native of tropical America (*batata* equals potato, name misapplied to *Solanum tuberosum*). About a score of species are known, chiefly from tropical America. *Batatas edulis* is the sweet potato, largely cultivated in the hotter parts of both hemispheres. In the E. and W. Indies, where they grow, our common potato, *Solanum tuberosum*, is called the Irish potato, to distinguish it from the sweet potato or B. The tuberous roots are sweet, mealy, and wholesome, but slightly laxative, and are eaten as potatoes, plants which became their substitute in Europe and appropriated their name.

Batavi, anct. race of Celts or Gers., mentioned by Tacitus as a branch of the Chatti, a Ger. tribe. They inhabited the land between the Rhine, Waal, and the Maas, called the Insula Batavorum. When subject to the Roms, they received advantages from them, and their cavalry was used by their conquerors.

Batavia, city of the Netherlands E. Indies situated in prov. of same name, in the N.W. coast of Java. It is near the mouth of the Tjiliwong, or Jaccatra, the latter name also being that of the tn. on the site of which B. was built by the Dutch early in the seventeenth century. The

tn. was for many years proverbially unhealthy, for the early Dutch colonists had made, as it were, miniature Holland of B., the tn. being intersected by a network of canals. What added to the unhealthiness of the tn. in its earlier days was the city wall, but this was demolished early in the nineteenth century when B. fell into the hands of the Fr. The Brit. occupied it from 1811 to 1816. A new tn. (Wetevreden) has been built inland on higher and more healthy ground about 22 m. from the old, and as the bay on which B. stands is yearly becoming more shallow, the new port of Tanjong Priong was constructed (1880), 6 m. to the N.E. Higher education is given at the Gov. Univ. at B., which has 4 faculties: Law (1924), Medicine (1927), Academy for Indonesian civil servants (1938), and Arts (1940). The old tn. contains the town hall, exchange, and the offices of the great firms, but is only visited by Europeans during business hours. The suburbs are tropical garden cities. The products of Java and the other is. are shipped at B. and those of Europe and E. Asia imported. B. was the scene of serious disorders in Nov. 1945 during the Indonesian nationalist revolt. Dutch and Ambonese troops were prominent in these disorders. (See further under JAVA.) Pop. (city), 440,000; (prov.), 3,000,000.

Batavia, cap. of Genesee co., New York, U.S.A., situated on Tonawanda Creek, about 40 m. N.E. of Buffalo. Manufs. farm implements. The state institute for the blind is situated here. Pop. 17,000.

Batavian Republic, the name by which the Netherlands were known from May 16, 1795, till June 8, 1806, i.e. from the conquest of the country by the Fr. till the appointment of Louis Bonaparte as king of Holland.

Batchian, Batshian, or Bachan, is. of Netherlands E. Indies; one of the Ternate group of the Molucca Archipelago, S.W. of Halmahera Is. Area 850 sq. m. It is mountainous and fertile, but is only inhabited on the coast. It was captured from Spain in 1610. The chief tn., Batchian, has a pop. of 2000.

Bateman, Sir Frederic (1824-1904), Eng. physician and scientific writer. He graduated, 1850, at Aberdeen Univ., and became a fellow of the Royal College of Physicians, 1876. Author of *Aphasia and the Localisation of Speech*, 1870; *The Idiot: his Place in Creation*.

Bateman, John Frederic La Trobe (1810-89), Eng. civil engineer, b. near Halifax. His life work was the construction of reservoirs and waterworks. Owing to his suggestion, Manchester obtained its water supply from Lake Thirlmere, and Glasgow from Loch Katrine. He also superintended the construction of the waterworks of many other large tns., and was responsible for the water schemes of Buenos Aires, Naples, and Constantinople.

Bateman, Kate Josephine (1842-1917), Amer. actress, b. at Baltimore, daughter of Hezekiah B. (see below, BATEMAN,

SIDNEY). Her first appearance on the stage was at the age of 4, in *The Babes in the Wood*, but later she played chiefly in Shakespearian and classical drama, with her father as her manager. She acted at the St. James's Theatre, London, in *Richard III.* in 1851; and in other leading parts from that date until 1909. From 1892 she conducted a school of acting. Died in London, Apr. 8, 1917.

Bateman, Sidney Frances (1823-81), Eng. actress and dramatist, *née* Cowell, brought up in Ohio, where her family had settled. She became the wife of Hezekiah B. (1812-75), Amer. theatrical manager, and coming to London in 1870 assisted her husband in managing the Lyceum Theatre until 1875; later she managed the Sadler's Wells Theatre. Her 2 most popular plays were *Self*, a comedy, and a tragedy, *Geraldine*.

Bateman, William (c. 1298-1355), bishop of Norwich, and founder of Trinity Hall, Cambridge. Pope Bonedict XII. appointed him dean of Lincoln about 1340. During the wars in France he undertook diplomatic negotiations between Edward III. and the Fr. king, 1343-54. In 1344 he succeeded Antony Beke as bishop of Norwich, and was consecrated by the pope at Avignon.

Bates, Arlo (1850-1918), Amer. author, b. at E. Machias, Maine. Educated at Bowdoin; some time editor of *Boston Sunday Courier*. Author of *A Wheel of Fire*, 1885; *Sonnets in Shadow*, 1887; *The Philistines*, 1889; also books on the teaching and writing of Eng. and the study of literature.

Bates, Harry (1850-99), Eng. sculptor, b. at Stevenage, Herts. Having won, after 4 years' study, the travelling scholarship of £200 at the Academy Schools, he went to Paris in 1883 to study under Rodin. In 1892 he was elected A.R.A. 'Love and Life' is considered his masterpiece.

Bates, Henry Walter (1825-92), Eng. naturalist and explorer, b. at Leicester, Feb. 8. His father was a manufacturing hosier, and his son entered the business, but in 1844 he met Alfred Russel Wallace, and in 1848 they sailed together in a trading vessel to Pará. They had practically no money, but hoped to sell their collections when made. B. was 11 years in the country, made his way up the Amazon for 1400 m., and discovered 8000 new species of insects. In a paper which he read to the Linnean Society on the insect fauna of the Amazon valley, he stated and solved the problem of mimicry. His best-known work is *The Naturalist on the Amazons*, 1863.

Bates, Herbert Ernest, Eng. novelist, b. 1905; educated at Kettering Grammar School. He began life as a journalist, and pub. his first novel, *The Two Sisters*, at the age of 20. Since then have followed a number of novels, in which various aspects of country life are depicted with a sensitive touch. They include *Catherine Foster* (1929), *Charlotte's Row* (1931), *The Fallow Land* (1932), *The Poacher* (1935), *A House of Women* (1936), *Fair Stood the Wind for France* (1944). He has also

written short stories and essays. He served in the R.A.F. in the Second World War, and his experience was the source of his poignant stories of service life, originally pub. under the pseudonym 'Flying-Officer X.' A wartime episode is also the subject of his novel, *The Cruise of the Breadwinner* (1946), notable for its play of character and the descriptive truth of the writing.

Bates, Joshua (1788-1864), Amer. financier, b. at Weymouth, Mass. Sent to London in 1815 to take charge of business for Gray & Son; met the Barings, and formed a partnership with John Baring; B. eventually became senior partner of Baring Bros. & Co. During the Civil War he used his influence against the Confederate states.

Bates, Katherine Lee (1859-1929), Amer. prof., b. at Falmouth, Massachusetts; educated at Wellesley College, at which she became prof. of Eng. literature. Among her works are *Hermits Island*, 1891; *American Literature*, 1898; *America the Beautiful and other Poems*, 1911; *In Sunny Spain*, 1913; *The Retinue and other Poems*, 1918; *Sigurd, our Golden Collic and other Comrades of the Road*, 1919; *Yellow Clover* (in memory of Katherine Coman), 1922; *The Pilgrim Ship*, 1926.

Bates's Case (or the 'Case of Impositions'), famous case in Eng. constitutional hist., which came before the court of exchequer in 1606. In that year James I. directed the collectors of customs to demand a duty of 5s. per cwt. on imported currants, in addition to the 2s. 6d. granted by the Statute of Tonnage and Poundage. John Bates, a merchant of the Levant Company, refused to pay the additional duty, on the ground that it had not been granted by Parliament; but a unanimous decision of the 4 barons of the court of exchequer, under Chief Baron Fleming, was soon given for the Crown on process against him by information. The decision, which created a dangerous precedent, was entirely subversive of liberty, but, apart from the fact that in those days judges could be dismissed at the royal pleasure, Eng. constitutional law had not reached that stage of development which later, under Coke and Hale, estab. for all time what is known as the 'rule of law.' See 2 State Trials, 371; S. R. Gardiner, *History of England* (l. 449), 1883-94; *State Papers, Domestic*, xlviii. 109, 116, xlix. 10; and l. 1.

Bateson, Mary (1865-1906), Eng. historian, b. at Robin Hood's Bay; daughter of a master of St. John's College, Cambridge. Educated at Newnham, of which she became a fellow. Her main interest was the study of the hist. of the Middle Ages, especially that of the constitutional and legal problems offered by the hist. of municipalities and borough customs. Among her contributions of most importance were 'The French in America' (*Cambridge Modern History*, vol. vii.); on the 'Laws of Breteuil' in the *English Historical Review*, 1900; *Bale's Index Britannicæ Scriptorum* (1902) (in colla-

boration with W. B. L. Poole); and papers on historical criticism and investigation, including a review of publications on the hist. of England in *Jahresbericht der Geschichtswissenschaft*, 1906.

Bateson, William (1861-1926), Eng. biologist, b. at Whitby. Educated at Rugby School and St. John's College, Cambridge, he was early attracted to biological studies. He became Silliman lecturer at Yale in 1907; prof. of biology at Cambridge, 1908-9; director of John Innes Horticultural Institution at Merton Park, Surrey, 1910; Fullerian prof. of physiology, Royal Institution, 1912-14; president of the Brit. Association for Advancement of Science, Australia, 1914; trustee of Brit. Museum, 1922. In addition to his various papers on biological subjects, he pub. books entitled *Materials for the Study of Variation*, 1894; *Mendel's Principles of Heredity*, 1902; *Problems of Genetics*, 1913.

Bath, in its original sense, is the plunging of the body into water, fresh or salt, hot or cold, but the meaning is now extended to the application of some unusual substance to the body or the alteration of the enveloping atmosphere. The institution of bathing is of Eastern origin, and among many oriental peoples was a religious rite. It was practised among Jews, Buddhists, and Muslims, and prevailed among the Gks. at an early period, and was subsequently valued by the Romans. The spread of the custom came through the Romans, who never formed any colony throughout the Old World without building Bs. These were often magnificent structures and closely resembled in number of chambers and uses the modern Turkish B.; they were used as lounges by the Romans, who resorted to them daily for rest and recreation. In England to-day the Turkish B. is popular on account of its stimulating influence on the system, but many other forms of bathing are common. In the Turkish B. the bather passes from one warm-air room to another until he perspires from every pore, then undergoes a shampoo, ending with being sprayed with warm water, steadily decreasing in heat until it runs cold. Hot-air Bs. may also be impregnated with such substances as sulphur or eucalyptus; brine Bs. are common to some places; electric Bs. are water Bs. into which currents of electricity are introduced; animal Bs. consisted in wrapping the body in the hide of a newly killed animal, or in insertion of part of the body in the yet living animal; mineral Bs. are common to spas all over Europe.

See W. P. Gerhard, *Modern Baths and Bath Houses*, 1908; P. Négrier, *Les Bains à travers les âges*, 1925; A. W. S. and K. M. B. Cross, *Modern Public Baths*, 1930.

Bath, city, municipal co., and parl. bor. of Somersetshire, situated in the valley of the Avon, 107 m. W. of London. Pop. 69,000. B. is built in a natural amphitheatre, and as the character of its buildings and streets corresponds with the beauty of its situation, it has an appearance equalled by no other Eng. city. These advantages, and especially the

therapeutic efficacy of its medicinal spring, have long made B. the resort of fashion. The houses of B. are all built of the white freestone known as Bath stone (*q.v.*). The numerous and handsome public buildings of B. include the assembly rooms, the pump-room, the city markets, and the guild hall. The abbey church is one of the finest specimens of Perpendicular Gothic architecture. The present building was begun in the reign of Henry VII., the original foundation dating back to 775. The Rom. Catholic priory church is a handsome building with a spire 200 ft. high.



F.A.-Reuter

THE WEST FRONT OF BATH ABBEY

On the right is the pump-room.

B. has a park and numerous open spaces, many educational establishments, a museum, theatre, hotels, etc. The chalybeate springs are beneficial in gout, rheumatism, cutaneous diseases, etc. Half a million gallons flow every day from the hot springs of B., the only natural hot springs in Britain and the richest in radium emanation. Their temperature ranges from 117° to 120° F. The great Rom. bath occupied a hall 110 ft. by 68. The Royal Baths were opened by the Earl of Ypres in 1916, the Bath St. wing in 1919, the Old Royal Baths, entirely reconstructed, in 1927. All the baths belong to the corporation, and full details will be found in *The Book of Bath*, issued by it. B. is of great antiquity; it was called *Aquæ Sulis* by the Romans. Magnificent remains of the Rom. baths exist. Richard I. granted the tn. its earliest existing charter, confirmed by Henry III. and extended by George III. B. was

most famous in the days of 'Beau' Nash, M.C. from 1704 to 1761. The follies and vices of the city have frequently been commemorated by Fielding, Smollett, Anstey, etc. B. is, with Wells, the seat of a diocese, returned 2 members to Parliament from 1295 to 1918 and now returns 1. The city suffered severely from air raids during the Second World War, particularly in the so-called 'Baedeker raids' in Apr. 1942. Over 200 buildings of architectural or historic value were either destroyed or seriously damaged, including the Royal Crescent, the Circus, and the assembly rooms. The anct. windows of the abbey were also smashed. See F. Harrison, *The City of Bath*, 1924; C. M. Spender and E. M. Thompson, *Bath*, 1922; G. Home and E. A. Foord, *Bristol, Bath, and Malmesbury*, 1925; E. Sitwell, *Bath*, 1932; B. Little, *The Building of Bath*, 17-1947, 1948.

Bath, co. seat of Sagadahoc co., Maine, U.S.A., on the W. bank of the Kennebec R., 36 m. N.E. of Portland. It has a good harbour, and shipbuilding is the prin. industry. Other manufs. are iron, brass, and lumber, and there is a trade in ice, coal, and iron and steel. Pop. 10,235.

Bath, Knights of the, Brit. order of knighthood, whose origin is uncertain, though it is traditionally attributed to Henry IV., who bestowed the order on 46 knights on the day of his coronation. It was allowed to lapse from the time of Charles II. until the reign of George I., when it was revived, and the number limited to the king and 37 knight-companions. It was formally instituted in 1815, and in 1847 it was extended to civilians. The order now consists of 3 classes: the members of the first class are knights of grand cross (G.C.B.); those of the second class knights commanders (K.C.B.), and those of the third class companions (C.B.). Each of the classes is subdivided into military, civil, and honorary members. The dean of Westminster is dean of the order. The ribbon of the order is crimson, and the badge a gold-white cross (military), gold oval (civil); the motto is 'Tria juncta in uno.' The 2 first classes also wear a star.

Bath-brick, name given to the cakes of siliceous sand used for scouring vessels, cleaning knives, etc. These cakes are made from the sand of the R. Parret, and manufactured at Bridgwater, in Somerset.

Bathgate, a mkt. tn. of W. Lothian, Scotland. Coal, freestone, and limestone are found in the neighbourhood; there are also paraffin works and a distillery. Pop. 8,500.

Bathometer, or **Bathymeter** (Gk. *βαθός*, deep, *μέτρον*, measure), name applied to an instrument used in deep-sea sounding, especially for one when the depth is inferred by the force of gravity.

Báthori, or **Battori**, name of an eminent Hungarian family, from the better-known branch of which sev. illustrious personages have sprung. Stephen B., b. in 1532, so distinguished himself in the army that he was unanimously elected to the sovereignty of Transylvania in 1571, on the

death of John Sigismund Zapolya, nephew of the king of Poland. In 1575 he was elected to succeed Henry of Valois on the Polish throne, and was crowned at Cracow in 1576. The internal condition of Poland at this time was unsatisfactory, dissension being rampant, but Stephen soon effected a great improvement. He declared war against the tsar of Muscovy, and emerged the victor. He *d.* suddenly at Grodno in 1586. Stephen's nephew, Sigismund B., became prince of Transylvania in 1581. He freed the land from the Turkish power, but out of mere caprice resigned his dominions to the Emperor Rudolph II., who in return created him a cardinal, and gave him 2 principalities in Silesia. He changed his mind, and on being invited by the Transylvanians, returned, but his luck and talent forsook him. Many times defeated and disgraced, he was sent to Prague by the emperor, and *d.* there in 1613. Elisabeth B., niece of Stephen, and wife of Count Nadassy of Hungary, is notorious as a type of inhuman cruelty. The rumours current that she used to murder young girls to bathe in their blood were shown to have some foundation in 1610, when it was discovered she had killed over 600 girls. She was shut up in Osej fortress, and *d.* there in 1614. For the connection of this case with the 'werewolf' tales, see the *Book of Were-Wolves* by S. Baring-Gould.

Bathos (Gk., depth), term which indicates the descent from lofty thought in speech or writing to the commonplace or ridiculous, either inadvertently or intentionally.

Baths, Science of, see **BALNEOLOGY AND BALNEOTHERAPEUTICS**.

Bathsheba, wife of Uriah, and mother of Solomon. King David, seeing her one day from the roof of his palace, bathing in a court, coveted her. Not daring openly to commit adultery, he dispatched Uriah, with a letter commanding his destruction, to Joah, who was besieging Rabbath Ammon. His device succeeded. He wedded B., and Nathan rebuked him. She attained the full splendour of queen-mother when Solomon bowed down before her. (2 Sam. xi., xii.)

Bath Stone, name of a species of oolitic limestone, so called because it is found near Bath. It is used for building. When quarried it is soft, but though it becomes hard on exposure to the air, it is not very durable.

Bathurst: (1) Prin. tn. of the W. dist. of New S. Wales, on the S. bank of the Macquarie R., in 32° 25' S. and 149° 42' E. It is the centre of the chief corn-growing dist. in N.S.W. There are gold, silver, and copper mining, railway works, coach factories, tanneries, flour mills, and manufs. of boots and shoes. Pop. 12,000. (2) The cap. of the Brit. colony of Gambia, W. Africa, on a marshy is. at the mouth of the Gambia R.; the only export of importance is the ground nuts which are the staple product of the colony and are used in the manuf. of margarine. Pop. (1931) 14,370.

Bathurst, Allen, Earl (1684-1775), *b.* at Westminster; entered Trinity College,

Oxford, 1699. Entered Parliament for Cirencester, 1705; promoted union with Scotland and opposed Marlborough; made a peer, 1711; appointed treasurer to George III. (then Prince of Wales) until death of George II., 1760. Received a pension of £2000 and was advanced to an earldom; he was a friend of Pope, Swift, and Addison. Henry, his son (1714-94), was made chief justice of the common pleas, 1754, and lord chancellor, 1771, with the title of Baron Apsley; resigned 1778.

Bathurst Island, one of the Parry Is., of N. Australia, 120 m. W. of Port Essington. It lies between Cornwallis Is. on the E. and Melville Is. on the W. Discovered by Captain Parry in 1819. Length about 30 m. It is partly covered with forests and partly unproductive.

Bathybius (Gk. *bathu*, deep, *bios*, life), name applied to a silmy mass discovered in great depths of the ocean and first described by Huxley in 1868. *B. haeckelii* was supposed then to be a new organic mass. *Proto-bathybius* was the name given by Dr. Bessels in an Arctic expedition of 1876 to a similar substance found in Smith's Sound. The *Challenger* expedition of 1872-76 disproved the theories of Huxley and Haeckel, showing B. to be caused by the addition of alcohol to the sulphate of lime in the sea-water.

Bathycles, anct. Gk. sculptor, of Magnesia on the Meander in Lydia. He is thought to have lived in the sixth century B.C. B. was the artist who made the throne of the Amyclæan Apollo at Amyclæ, near Sparta.

Bathymeter, see **BATHOMETER**.

Batignolles, arron. in the N.W. of Paris; formerly a tn.

Batik (Malay *batik*), process for colouring fabrics, originating among the Dutch E.-Indian natives, and subsequently used in Europe for velvet, velours, and similar fabrics. The design is covered with melted wax, and the uncovered portions dyed, the wax then being dissolved in boiling water.

Batiste, material made of fine linen or cotton lawn; in France the term is applied to cambric. The inventor of the material was a certain Baptiste of Cambrai.

Batley, tn. in the W. Riding of Yorkshire, N. of Dewsbury. It is a municipal bor., since 1868, included in the parl. bor. of Dewsbury. The prin. manuf. of B. is woollen goods; it is the headquarters of the heavy woollen trade, in pilots, druggists, shoddy, etc. Pop. 35,000.

Batman, weight used in the E. which varies according to the locality. In Aleppo and Smyrna it is equivalent to 16 lb. 15 oz. 14 dr. avoirdupois; the greater Turkish B. is about 157 lb., the lesser about 39 lb.

Batman (Fr. *bat*, pack-saddle), term used in the Brit. army for the soldier-groom or servant of an officer, originally the man who was in charge of a bat-horse, or baggage animal.

Batman, John (1800-40), reputed founder of Victoria, was a settler in Van Diemen's Land. He formed a company to colonise Port Phillip, and proceeded thither in 1835. He obtained from the

aborigines a tract of 600,000 ac., including the present site of Melbourne, but on returning home his title to the land was declared invalid.

Batna, fort. tn. in Algeria, on the Biskra railway, 65 m. S.S.W. of Constantine. It is near the splendid cedar forests of Mt. Tugurt. Altitude 3471 ft. Pop. 17,000.

Batn-el-Hajar (womb of rocks), dist. of the Nile valley of Nubia. It stretches for a distance of about 95 m., and has many lofty granite hills.

Batolites (Fr. *bâton*, a stick, Gk. *λίθος*, stone), genus of long bivalve fossil shells which occur as rocks in the Alps in the Cretaceous system. They are Lamelli-branchs, and are allied to the *Hippurites*.

Baton (Fr. *bâton*, a stick), short staff or club. The name is applied to sev. articles. The short staff presented to every Brit. field marshal by the king, as the symbol of authority, is known as a B. The long staff which is carried by the drum-major of an infantry regiment is also so called, as is the truncheon of a policeman. As a musical term, the B. is the thin stick which is used by the conductor of an orchestra or choir to conduct the performance. **Baton** (baston, baton, or batun) sinister is a term used in heraldry to indicate illegitimacy. It is a diminutive of the bend sinister, being one-fourth of its width, and does not extend from side to side of the shield. It came into use in England in the fifteenth century to mark the illegitimate descendants of the royal family.

Batoni, **Pompeo Girolamo** (1708-87), It. painter, b. at Lucca. His father was a goldsmith, and Pompeo had thus an early opportunity of displaying his ability for design. He estab. himself in Rome, where he studied Raphael and the antique. In a few years he obtained the first name in Rome, and lived there until his death, for 40 years, without a rival, with the exception of Mengs. B. was equally renowned in his time as a portrait painter, and in historical subjects.

Baton Rouge, cap. of Louisiana, U.S.A., on the l. b. of the Mississippi. It is situated on a high bluff, and has a college, an arsenal, and a penitentiary. On Aug. 5, 1862, the Confederate forces under General Breckenridge suffered a heavy defeat here. Pop. 34,700.

Batony, tn. in prov. of Csanád, Hungary, 25 m. E.N.E. of Mako; pop. 13,000.

Batou Khan (d. 1254), Tartar emperor, grandson of Genghis Khan, ruled over Russia and Bulgaria. He laid waste Hungary, and in 1252 acquired Moscow.

Batrachia (Gk. *βατραχίος*, frog-like), term that is frequently used synonymously with the class Amphibia, i.e. frogs, toads, newts, salamanders, etc., and sometimes with the order Anura, which consists of frogs and toads alone.

Batrachomyomachia (Gk. *βατραχός*, frog, *μῦς*, mouse, *μαχί*, battle), Gk. poem consisting of 294 hexameter verses, which is ascribed to Homer, but attributed by Plutarch and Suidas to Pigres of Haliarnassus. The *Battle of Frogs and Mice* is a parody on the *Iliad*.

Batrachus, architect and sculptor of Laconia, who lived in the time of Augustus. Pliny tells a story of B. and his fellow countryman Saurus. He says, 'Being very rich, they built at their own cost 2 temples to Jupiter and Juno at Rome, enclosed by the porticoes of Octavia, hoping for an inscription; but this being refused them, they introduced their names in another manner, by carving a lizard (Saurus) and a frog (B.) in the centre of the Ionic volutes of the columns, one in each volute' (Pliny, *Hist. Nat.*, XXXVI. iv. 11).

Batshian, see **BATCHIAN**.

Batta (Kanarese *bhatta*, rice in the husk), extra money added to the pay of a Brit. officer in India. It varied according to place and circumstances.

Battalion, tactical and administrative unit of command in a military force. In the Brit. Army only the infantry and tanks are organized in Bs. Engineers train, and, less frequently, cavalry are also organized, in Bs. in some countries, and tanks in most, if not all, cases. The war strength of a Brit. infantry B. is 1000, or, counting all ranks, 1096, and the colonial garrison strength about 860. This number is, theoretically, the largest that can be controlled in action by one commander. The war strength of a B. of other countries is between 500 and 1000. Before the First World War 8 companies formed a Brit. B., each with a captain and 2 lieutenants; for tactical purposes 4 companies formed a half-B., commanded by a major. A modern Brit. infantry B. is divided into 5 companies: a headquarters company, 3 rifle companies, and a machine-gun company. The headquarters consists of the commanding officer, the second in command, the adjutant, the intelligence officer, the training officer, and the supply officer. The bandmaster and sergeant-major of a B. are warrant officers not holding king's commissions. Machine-gun Bs. were formed during the First World War, but have been abolished in the Brit. Army. In some armies 2 or 3 batteries of artillery constitute a B.; in others they are called a group. The cavalry equivalent in most armies is the squadron, as it is in the air force. In general the term is also used to signify the unit commanded by a major, but in the Brit. Army a B. is commanded by a lieutenant-colonel.

Battam, see **BATANG**.

Battas, **Battaks**, or **Battahs**, race of people which inhabit the central highlands of Sumatra, from the volcano Ophir northwards as far as Achi. Their national centre is Lake Toba. The B. are akin to the Malay race; some were independent and remained heathen until 1908, whilst some were under Dutch dominion and Mohammedans. The B. till the soil, and grow rice and maize; they also keep cattle, horses, goats, and pigs. Their prin. occupation consists in the manuf. of ironwork, earthenware, and cloth. The houses are built of wood, covered in with the ribs of palm-leaves. The vils. were formerly fortified by earthen walls and bamboo palisades. The people are

distinguished by their unwillingness to give up old customs. They are of middle height and light brown in colour, with long black hair. A great part of the Bs. were converted to Christianity by Protestant missionaries, and slavery, cannibalism, and other barbarous customs and the endless civil wars were suppressed by the Dutch Gov., which since 1910 has ruled the whole of the tribes. Peaceful as a rule, the B. have no lack of courage on occasion. They have also a written language and literature. See D. Réal, *The Batiks of Java*, 1924.

Batten, commercial term for various kinds of sawn timber smaller than a plank, usually 12 or 14 ft. long, 7 in. broad, and 2½ in. thick. The term is also used in connection with narrow wooden strips used in shipbuilding.

Battenberg, name of a Ger. aristocratic family, which became extinct about 1314. The seat of the family was near B., a small place in the Prussian prov. of Hesse-Nassau. In 1851, Alexander, the younger son of Louis II. of Hesse, marriedmorganatically the Polish Countess Julia Theresa von Hauke, who was then created Countess of B. In 1858 she was given the rank of princess, and her children were permitted to call themselves Princes and Princesses of B. The eldest son of the marriage, Louis Alexander, was b. in 1854. In 1884 he married Princess Victoria, daughter of Louis IV. of Hesse and of Princess Alice, daughter of Queen Victoria. (See MILFORD HAVEN, MARQUESS OF.). He d. in 1921, leaving 2 sons, George Louis Mountbatten (1892-1938), earl of Medina and second marquess of Milford Haven, and Lord Louis Earl Mountbatten (q.v.). The second son of Julia, Countess of B. was Alexander Joseph, who was prince of Bulgaria, 1879-86, and d. in 1893. The third son, Henry Maurice was b. in 1858, and married Beatrice, youngest daughter of Queen Victoria, in 1885. He d. in 1896, when returning from service with the Brit. troops in the Ashanti war. He had 3 sons and a daughter, Victoria Eugénie, who married King Alfonso XIII. of Spain in 1906. The fourth son of the Countess of B., Francis Joseph, was b. in 1861, and married the daughter of Nicolas I. of Montenegro in 1897. The only daughter of the countess of B. was Marie Caroline, who was b. in 1852 and married Gustavus Ernest, prince of Erbach-Schönberg, in 1871.

Batter, in architecture, the wall of a building which recedes as it rises, so that the B.-rule, or plumb-line, falls within the base. The walls of wharves usually batter.

Battering-ram, military engine employed in anct. times to cause a breach in the walls of a besieged place. Two kinds of Bs. were used, one kind being suspended in a frame, the other in movable on wheels or rollers. The ram consisted of a large beam, or spar, with a massive metal head; it was usually set in motion by means of cords passing over pulleys. A roof or screen generally protected those employing it. Bs. were often made of great weight and size.

Battersea, suburb of S.W. London, England, on the Surrey side of the Thames, spanned near here by the Chelsea, Albert, and B. bridges. B. Park, which was commenced in 1852, has an area of 185 ac., and the Albert Palace, opened in 1885, is also in B. Many factories, foundries, and engineering works are in the suburb. Lord Bellingbrooke was b. in B., and here the duke of Wellington fought a duel with Lord Winchelsea in 1829. A metropolitan municipal bor. of the co. of London, B. sends 2 members to Parliament, and has a pop. of 160,000.

Battersea, Cyril Flower, first Baron (1843-1907). Eng. politician, b. at Streatham and educated at Harrow and Trinity College, Cambridge. He entered Parliament in 1880, representing first Brecknock, 1880-85, and afterwards S. Bedfordshire, 1885-92. He was junior lord of the Treasury, under Gladstone, in 1892, and was created a peer in the same year.

Battery, see under ARMY and ARTILLERY.

Battery, Assault and, see under ASSAULT.

Battery, Electrical, see ACCUMULATOR and CELL.

Bathýányi, name of a Hungarian family, which traces its descent to A.D. 884. It numbered among its members some of the most illustrious men of Hungary. In 1526 Francis B. distinguished himself in the battle of Mohács, and Balthazar B. in the Turkish wars of the same century. Count Casimir B., b. in 1807, was minister of foreign affairs in Hungary during the insurrection of 1849. After the disaster of Vilayos he fled with Kossuth into Turkish ter., and afterwards he went to Paris, where he d. in 1854. Count Louis B. was b. at Pressburg in 1806, and entered the army as a cadet, but subsequently adopted a diplomatic career. He was appointed president of the ministry when Hungary at length obtained one in 1848. Despite his moderation as a member of the diet, he was arrested in Jan. 1849, when the Austrians entered Pest. He was condemned to be hanged on Oct. 6, 1849, but by wounding his neck with a dagger he prevented this form of execution. He was, however, shot.

Battiadæ, Cyprian dynasty of 8 kings. They were: Battus I. (c. 630 B.C.), Arceilaus I., Battus II., Arceilaus II., Battus III., Arceilaus III., Battus IV., and Arceilaus IV. (d. about 450 B.C.). The last-named is the subject of 2 of Pindar's odes. The hist. of the dynasty may be found chiefly in Herodotus.

Batticaloa, cap. tn. of dist. of B., Ceylon, situated on a small is. off the E. coast. It has an excellent harbour and a good trade, particularly in coco-nut products. Area of dist. 13,060 sq. m.; pop. of dist. 193,000; of tn. 11,000.

Battislini, Mattia (Barone di Poggio Casalino (1858-1928), It. singer known by the title 'La Gloria d'Italia.' His debut in 1878 at the Teatro Argentina in Rome brought him an engagement immediately for the It. opera in Buenos Aires. Thereafter he toured in all the prin. thes.

of S. America and Europe and attained fame as one of the greatest dramatic baritones in the world. B. created many important roles, and his friend Massenet re-wrote for him the tenor part in *Werther*.

Battle, mkt. tn. and par. in the co. of Sussex, situated 6 m. N.W. of Hastings. It was anciently called Epiton, but after the battle of Hastings in 1066, which was fought near here, its name was changed to B. It contains the ruins of B. Abbey, built by William I. on the spot where King Harold was killed. The site of the abbey is occupied by a modern residence, in which some of the abbey ruins have been included. After the First World War it was sold and became a school for girls. In 1930 the building was burned down. The tn. has an agric. trade. Pop. 3600.

Battle, fight between armed forces, whether large or small, on land, sea, or in the air. A B. is termed general when both armies are brought fully into action; if only a considerable portion of each it is partial. When only small sections are engaged it is called a skirmish. A commander may choose to act on the offensive or defensive, or to combine both, according to circumstances; judgment in decision, skill in preparing the plan of B., and promptness in varying it as required, are the marks of a great leader.

Battle, Wager of, see TRIAL BY COMBAT.

Battle Abbey, The Roll of, list of the barons who fought on the side of William I. at the battle of Hastings. It is supposed that at the end of the battle a list was made of his chiefs, who numbered 629, and among whom the titles and property of the defeated were distributed. Really, however, it is of later date than the Conquest—some say that it was compiled as late as the fourteenth century, its purpose being (it is alleged) to show which families 'came over with the Conqueror.' The Duchess of Cleveland ed. *The Roll of Battle Abbey*, with notes, etc., in 3 vols., 1830. Consult also Walcott, *History of Battle Abbey*, 1867.

Battle-axe, weapon which has been in use from primitive times. The head was originally made of stone, then of bronze, and finally of iron or steel; some varieties could be held with one hand, while others required two. The pole-axe, or halberd, is merely a B. with a long handle.

Battle Creek, city in Calhoun co., in the S.W. of Michigan, U.S.A., on the Kalamazoo R., 48 m. from Grand Rapids. It was settled in 1831, and became a city in 1859. Lying in the centre of a rich fruit and grain producing dist., it is known for the manuf. of health foods. It has also large works for making agric. implements, railway cars and locomotives, and pumping engines, besides a fine medical college and sanatorium. Pop. 44,000.

Battle Honours, devices or distinctions employed to memorialise outstanding episodes in the hist. of an army or a regiment. These devices take various forms, the commonest being the emblazoning of the names of battles or campaigns on regimental colours. Other

forms are the granting of special badges, mottoes, and titles (such as 'Royal'), distinctive items of uniform (such as the bearskin of the Scots Greys, and the back-badges of the Gloucestershire Regiment). The custom is derived from the grant of 'augmentations of honour' to a knight's coat-of-arms in the Middle Ages. In the Brit. Army all B. H. are granted by the king, and are pub. in Army Orders and recorded in the monthly Army List, at the head of each regimental list. In the U.S.A. names of battles are not placed upon the colours, but are emblazoned upon streamers attached to the colour-pike, just below the head. In the Brit. Army, Royal Artillery units commemorate some particular episode in their subtitles, e.g. '25th Medium Battery (Battle Axe Company)' whose forerunners were a company of artillery which served with distinction at the capture of Martinique in 1809, and was presented with a battle-axe, which it still possesses. The 1st Foot Guards were granted the title of Grenadier Guards to commemorate their service at Waterloo. The 3rd Hussars are allowed an extra drum-horse to carry some drums captured from the Fr. at Dettingen; the 2nd Gurkhas (Brit. Army) carry a 'truncheon' to commemorate their service at the siege of Delhi during the Indian mutiny. It is a practice in most armies to decorate the regimental colours with medals, etc., but this is not permitted in the Brit. Army. B. H. are also painted upon regimental drums.



John H. Stone

THE BATTLEMENTED TOWER
OF SWANSEA CASTLE

Battledore and Shuttlecock, game played 2000 years ago in China, and still popular. It consists in batting the shuttlecock, a cork base surrounded by feathers, with parchment rackets, the game being to keep the shuttlecock in the air as long as possible.

Battelford, tn. at the confluence of the

Battle and N. Saskatchewan Rs., Canada. From 1876 to 1883 it was the seat of gov. for the N.W. Territories, but was then superseded by Regina. Fighting took place here during Riel's insurrection in 1885. A branch railway connects B. with the Canadian Pacific.

Battlement (O.F. *bataillement*), wall erected round the top of a fortified building consisting of rising parts known as cops or merlons, and intervening spaces called crenelles. The soldiers fired from the embrasure while taking refuge behind the merlon. In architecture Bs. are still erected for artistic effect.

Battleships, the heaviest class of warship, classified as capital ships, and including also battle cruisers, which latter, however, are nominally faster boats, being more lightly armoured. Armour plate was first used by the Fr. in 1859 after their experience of the power of shore batteries in the Crimean war; but these ironclads, as they were called, were none the less built of wood, covered with 4-in. wrought-iron plates—a tribute to the increasing power of shell-fire. The *Warrior*, of 9000 tons displacement and 44-in. plates, launched in 1860, was England's earliest ironclad. Three years later the ironclad was superseded by the ship with revolving turrets, the *Royal Sovereign* being the first of this type, and its armament was the standard main armament of a B. for many years. Guns were soon invented, however, which could pierce the armour carried by such vessels as the *Devastation* and others, of which the plate varied from 8 to 12 in., with turrets protected by 14-in. plating; whence later ships had a still greater thickness of armour, and still more powerful guns. The next development was a ship capable of firing in all directions from central batteries and, therefore, not dependent upon broadsides. Most subsequent developments have been due to increase in gun power, and vessels of larger displacement have had to be built to carry the heavy armament. The *Dreadnought*, completed in 1906, is generally held to be the type from which the modern B. has been evolved. She was 490 ft. in length, of 17,900 tons displacement, had 10 12-in. guns in 5 turrets, and many smaller guns, was plated with improved resisting substitutes for wrought iron, and was capable of a speed of 21 knots.

At the outbreak of the Second World War the Brit. Navy had 12 Bs. and 3 battle cruisers—the latter including the *Hood*, then the most powerful B. in the world (see HOOD, THIS), having a displacement of 42,000 tons; the *Repulse* (32,000 tons and armed with 15-in. guns), which was sunk by the Japs. in 1942, and the *Renown* of similar tonnage and equipment. Seven more Bs. were then being built, all of 35,000 tons and armed with 14-in. guns. *Nelson* and *Rodney*, completed in 1927, have a displacement respectively of 33,500 and 35,900 tons, and carry 9 16-in. guns. At the end of the war there were 17 Bs., the additions being *King George V.* (1940), *Howe* (1941),

Anson (1941), *Duke of York* (1941), all 35,000 tons displacement, and armed with 10 14-in. and 16 5.25-in. guns; *Temeraire* and *Lion* both completed (1943), each 40,000 tons displacement, and armed with 9 16-in. and 12 6-in. guns; and the *Vanguard* (1944) with similar main armament to the last 2 ships. The Washington Treaty (q.v.) prescribed 35,000 tons and 16-in. calibre as the limitations on size of Bs. and their guns, and, under the Anglo-Ger. naval agreement, 1937, these limitations were repeated. The provision designed to preserve the distinction between cap. ships and 'light surface vessels' (or cruisers), and to make effective the agreed restrictions on the latter, was from 10,000 to 17,500 tons displacement and from 8-in. to 10-in. calibre of guns. Japan, however, broke away from the Washington Treaty limitations, and, as a consequence, a further agreement was signed in June 1938 by Great Britain, America, France, and Germany limiting the calibre of gun in cap. ships to 16-in., as before, but increasing the permissive tonnage to 45,000.

The U.S. Navy, as at Jan. 1939, had 15 Bs., Japan was said to have 9, France 5, and Germany 5. The U.S. Gov. had then made provision for 6 new Bs.—2 for completion by 1942, and 4 by 1947, and it was also then decided to build ships of 45,000 tons in future. But this programme was settled before America entered the war; and by 1944 America had 23 cap. ships and 2 battle cruisers. No details were available concerning Japan's intentions, but the construction of 46,000-ton ships, carrying 18-in. guns, was rumoured. In the result her large new cap. ships were soon sunk by the Allies, and it might seem well estab. that in construction they were marked by grave defects. France was a party to the protocol which provided for the limitation of cap. ships up to 45,000 tons, but the Fr. Gov. subsequently announced that they would not build ships over 35,000 tons unless other continental powers exceeded that tonnage. The *Richelieu*, laid down in 1935, is a 35,000-ton B., as, too, the sister ship, *Jean Bart*, which, however, was half wrecked at Casablanca. Germany, strictly speaking, had no Bs., excepting 3 very old vessels of the *Hannover* class, which she was allowed to retain after the First World War, and which were then little more than training ships. In 1939 Germany had projected 2 35,000-ton ships, but at that date the largest Ger. warships actually in commission were the 26,000-ton *Gneisenau* and the sister ship *Scharnhorst* (q.v.) completed in 1938, officially classified as battle cruisers. Next to these in size were the 3 so-called pocket Bs. of the *Deutschland* class, of 10,000 tons displacement, and so lightly armoured that they were really no more than armoured cruisers. (See ADMIRAL GRAF SPEE.)

The *Vanguard*, the most recently built Brit. B., was launched on Nov. 30, 1944, and commissioned in Aug. 1946. It is a 42,500-ton ship, is somewhat shorter and broader than the *Hood* (q.v.), with a superstructure rising like a fortress more than

80 ft. above the water-line. It has a main armament of 8 15-in. guns, and a secondary armament of 16 5-25-in. guns, besides numerous 6-barrelled and single-barrelled Bofors. It has the latest radar equipment and embraces results of exhaustive research in every other sphere of ship armament and design. Thus the ship incorporates many lessons of the recent war in machinery damage control. A distinctive feature also is the streamlining of the funnels, the result of tests to evolve a design which would prevent the funnel gases from interfering with gunfire. The main power for propulsion and the many intricate services originates in boilers that incorporate a new system of high-efficiency oil-burning. There are on board information rooms where men can study; a cinema, with tiered seating for 200, and even soda fountains. Laundry, cooking, bakery galleys, and the air conditioning plant are all powered by electricity. *See also* CRUISER; NAVY AND NAVIES.

Battori, *see* BATHORI.

Battue (from Fr. *battre*, to beat), method of killing game, such as hares, pheasants, etc., by having them driven out of cover by beaters towards the spots where sportsmen are stationed to fire. In war or civil strife the term has often been applied to the slaughter of helpless crowds.

Batum, or **Batoum**, tn. in the Georgian Republic of the U.S.S.R., on the E. shore of the Black Sea. Three million pounds of tea are produced annually and excellent Turkish tobacco and a host of exotic flowers, but much fever is prevalent from May until July. It has a vast industrial quarter and 135 tanks contain oil brought hither by pipe lines or tank cars from Baku. But because the Soviet restrains both imports and exports with great rigour, shipping has dwindled and prosperity declined. Pop. (1939), 71,000.

Baturin, tn. of Chernigov Region, Ukrainian S.S.R., on R. Selma, 63 m. E. of Chernigov. From 1669 to 1708 it was the headquarters of the hetman of the Ukraine Cossacks. Pop. 3600.

Batz, tn., dept. Loire-Inferieure, France, situated on the coast, 50 m. N.W. of Nantes; has salt-pans and interesting antiquities. Pop. 2000.

Batz, is., *see* BAS.

Bauan, or **Baun**, tn. in Batangas, prov. Luzon, Philippine Is., at the head of Batangas Bay, 50 m. S. of Manila. Cacao, oranges, indigo, sugar-cane, and rice are grown; manufs. palm-fibre mats and hats, bamboo baskets, and cotton fish nets. Pop. 40,000.

Baucéant, *see* BEAU SÉANT.

Bauchi, hilly prov. of N. Nigeria, notable for its tin mines which are situated chiefly on the plateaux. Bauchi is the cap., and other tns. are Bukuru, the S. terminus of the railway from Kano, Ngaruta, and Leri. Pop. about 1,000,000, mostly Hausas.

Baucis, *see* PHILEMON AND BAUCIS.

Baudelaire, Charles Pierre (1821-67), Fr. poet, b. on Apr. 9 in Paris, the son of François B., a civil servant under the First Empire. After his father's death his

mother was married to Colonel Aupick, who was on good terms with his son-in-law, and saw that he was well educated at Lyons and at the Collège Louis le Grand in Paris. At the age of 20 B. was sent on a visit to India, but soon returned as he came into a small patrimony in 1842. Thereafter he lived an uneventful and retiring life in the bohemian and literary circles of Paris until 1864, when he endeavoured to set himself up in Belgium as a lecturer. His health had been undermined, however, and grew steadily worse. He returned to Paris, suffering from general paralysis, and d. on Aug. 31, 1867. His first vol. of poems, *Les Fleurs du Mal*, was pub. in 1857, and the author and publisher were prosecuted by the Gov. on account of the impropriety of certain poems which were omitted from the second ed. in 1861, their place being taken by 35 new poems. His poetry is simple in form and rich in vocabulary. It sprang from a keen delight in the sensual and passionate aspects of life, but subject at the same time to a critical analysis, combined with a mystical perception. It offended many people at the time on account of its extreme romanticism, and B.'s reputation also suffered on account of his way of life, in which he flouted conventional morality. During his lifetime he was esteemed more for his trans. from Edgar Allan Poe, a work which he carried out to perfection. His poetry, however, gradually gained a firm recognition, and his influence was such that he became the leader of the younger Fr. poets, and he is now recognised as the greatest of the poets of the later phase of the Fr. romantic movement. In addition to his poems, his only other considerable original work was *Petits Poèmes en prose*. He also wrote a number of stories and critical and miscellaneous essays.

Theophile Gautier's *Life of B.* was trans. into Eng. in 1915; also B.'s *Intimate Journals*, trans. by C. Isherwood (London and New York), 1930, and *The Letters of Charles Baudelaire to his Mother, 1833-66*, trans. by Arthur Symons, 1928. *See also* A. S. Patterson, *L'Influence d'Edgar Poe sur Charles Baudelaire*, 1903; J. Ivière, *Études: Baudelaire* (with others), 1911; G. T. Mines, *The Influence of Baudelaire in France and England*, 1913; P. Quennel, *Baudelaire and the Symbolists*, 1930; also studies on B. by A. Symons (1920), L. P. Shanks (Boston, 1930), L. Soupault (Paris, 1931), and E. Starke (1933).

Baudin, Charles (1784-1854), Fr. admiral, fought in the Napoleonic wars. In 1838 he distinguished himself by the capture of San Juan de Ulloa (or Ullua).

Baudissin, Wolf Heinrich von (1789-1878), Ger. writer, was for some time secretary to the embassy in Vienna, and later in Paris. Afterwards, however, he gave all his time to the study of literature. He modernised the language of much Ger. primitive literature, and also trans. Shakespeare and other Elizabethan dramatists, also Molière and Goldoni.

Baudouin, Manuel Achille (1846-1917), Fr. lawyer, b. at Tours, advocate general at Lyons, 1880; procurator general at

Limoges, 1885; advocate general at the court of cassation in 1880, and president of the civil tribunal of that court 3 years later. Prominent as procurator general in the revision of the Dreyfus trial. In 1913 became general president of the court of cassation.

Baudrillart, Henri Joseph Léon (1821-1892), Fr. economist, son of Jacques Joseph B. (1774-1832), a writer on forestry. As a member of the Academy of Moral and Political Science he was entrusted with an inquiry, the results of which were pub. in his *Agricultural Population of France*, 1885. He was prof. of political economy at the École des Ponts et Chaussées.

Baudry, Paul Jacques Aimé (1828-86), Fr. painter, b. in Vendée. He won the Prix de Rome in 1850. His subjects were mythological or decorative, but he painted one historical picture ('Charlotte Corday after the death of Marat'). His best work was his mural decorations in the Paris opera house, the château de Chantilly, and the Cour de Cassation. His works are marked by graceful design and rich colouring rather than by strength or originality.

Bauer, Bruno (1809-82), Ger. theologian and historian, b. at Eisenberg, Germany, and educated at Berlin, where he became a licentiate of theology in 1834. In 1839 he was transferred to Bonn, but within the next 2 years pub. works on the Gospels expressing such unorthodox views that his licence to teach was withdrawn, and he retired to Rixdorf to spend the rest of his life in study and authorship. His theories on the origins of the Gospels are, briefly, that St. Mark's was written in the time of Hadrian, and that from this the others were constructed a century later by Gentile converts, who then passed them off as genuine apostolical documents. B. also wrote histories of the eighteenth century and of the Fr. Revolution.

Bauer, Caroline (1807-77), Ger. actress, b. at Heidelberg. She made her début in 1822. In 1829 she was married morganatically to Prince Leopold of Coburg, then widower of the Princess Charlotte and afterwards king of the Belgians. Their union was unhappy, and came to an end in 1830. Returning to the stage for some years, she finally left it in 1844 to marry a Polish count. She wrote 2 vols. of theatrical reminiscences and memoirs.

Bauer, Otto (1881-1938), Austrian Socialist statesman, b. in Vienna. A doctor of laws of Vienna Univ. With Dr. F. Adler he founded a paper called *Der Kampf*, 1907. He was prisoner of war in Russia 1915-17. Made under-secretary to Victor Adler in 1918; on latter's death almost immediately afterwards, B. succeeded him as foreign secretary, Nov. 12, 1918. In this capacity he saw the inauguration of the republic; resigned, July 1919. He continued to hold an influential position in Austrian politics, until, in 1934, his opposition to Dr. Dollfuss made it advisable for him to leave Austria, and seek refuge in Czechoslovakia. He later went to Paris, where he d. After leaving Austria, he wrote the book,

Between Two World Wars. Other works: *Die Nationalitätenfrage und die Sozialdemokratie*, 1907; *Bolschewismus oder Sozialdemokratie?*, 1920; *Die österreichische Revolution*, 1923; *Der Kampf um Wald und Weide*, 1925.

Bauernfeld, Eduard von (1802-90), Austrian dramatist, b. at Vienna. His irrepressible humour, and his sense of the ridiculous both in circumstances and people, make him the Molière of the Viennese stage. *Leichtsinn und Liebe*, *Bürgerlich und Romantisch*, *Das Liebes Protokoll*, and *Moderne Jugend*, are the best known of his comedies.

Baugé, tn., cap. of a canton, dept. Maine-et-Loire, France, on R. Couanon, 23 m. N.E. of Angers. The Fr. defeated the Brit. under the duke of Clarence here in 1421. Pop. 3000.

Bauhin, Gaspard (Kaspar Bauhinus) (1550-1624), Swiss botanist, b. at Basel. He is said to have held the offices of prof. of Gk., of anatomy and botany, and of the practice of medicine, dean of the faculty of medicine, chief physician to the tn., and rector of the univ. His chief works were: *Phytopinax*, Basel, 4to, 1596, and *Prodromus Teatri Botanici*, Frankfurt, 1620. He also made collections of the synonyms of the botanical writers who had preceded him. The latter appeared in his *Pinax Teatri Botanici* in 1623, of which a second ed. was pub. in 1671, forming a complete key to the botanical knowledge of the day.

Bauhin, Jean (1541-1613), Swiss botanist and physician, b. at Basel, brother of Gaspard B. His father (an Amiens Protestant and refugee) placed him with Leonhard Fuchs (q.v.), the famous botanist, and afterwards with Konrad Gesner (q.v.), the great naturalist, whom he accompanied in excursions through Switzerland. He visited sev. other parts of Europe for the purpose of becoming acquainted with their vegetable productions, and with a view to collecting materials for his *Historia Plantarum*, afterwards pub. In 1566 he fixed himself at Basle, where he was elected prof. of rhetoric.

Bauhinia, genus of tropical Leguminosae named by Linnaeus after the 2 botanists, Bauhin. The leaves are generally divided into twin lobes, but the genus is chiefly remarkable for its twining plants which twist in and out in an intricate manner. *B. porrruta*, the Jamaica mt. ebony, is so called because its wood is sheathed in black.

Baul, tn. of Venezuela, in state of Zamora, 60 m. S. of San Carlos; pop. 10,000.

Baumann, Oskar (1864-99), Austrian traveller, b. in Vienna; in 1885 journeyed with Long up the Congo R. to Stanley Falls; the following year he explored Fernando Po, and 2 years later ascended the mt. of Kilimanjaro. During 1892-93 he led an expedition to Lake Victoria and explored the surrounding dist.; in 1896 he was made consul at Zanzibar. He pub. sev. works on his explorations.

Baumannshöhle, stalactitic cavern in Harz Mts., Brunswick, Germany, on Bode R., 5 m. S.E. of Blankenburg. It contains numerous fossil remains.

Baumbach, Rudolf (1840-1905), Ger. poet and novelist, b. at Kranichfeld. Among his best works are the epic, *Zlatorog*, 1877; the novel, *Trug-Gold*, 1878; book of lyrics, *Lieder eines fahrenden Gesellen*, 1878; and fairy story, *Ks war einmal*, 1889.

Baume-les-Dames, tn., dept. Doubs, France, on R. Doubs, 18 m. N.E. Besançon; cap. of an arron.; pop. 3200.

Baume-les-Messieurs, vil. in Jura dept., France, 6 m. N.W. of Lons-le-Saulnier. Pop. 400.

Baumgarten, Alexander Gottlieb (1714-1762), Ger. aesthetician, b. at Berlin. He studied at Halle, and became a warm admirer of Wolff's philosophy. B. applied himself to logic, on which he afterwards gave lectures at the Orphan Institution of Halle. He invented the word aesthetics, which he applied to the theory of taste, or the science of the beautiful. He divided the science of aesthetics into theoretical and practical; he developed his ideas first in his treatise, *Disputationes de nonnullis ad poema pertinentibus*, 1735, and in his *Æsthetica*, 1750. The other works of B. are *Metaphysica*, *Ethica Philosophica*, *Initia Philosophiæ Practicæ*. In 1740 B. was appointed prof. of philosophy at Frankfurt-on-the-Oder, where he d.

Baumgarten-Crusius, Ludwig Friedrich Otto (1788-1842), Ger. theologian, b. at Merseburg; studied at Leipzig Univ. From 1812 until his death he was prof. of theology at Jena. He was an authority on the hist. of Christian dogma, and his books on the subject include *Grundzüge der Biblischen Theologie*, 1828, and *Kompendium der Dogmengeschichte*, pub. 4 years after his death.

Baumgärtner, Andreas, Baron von (1793-1865), Austrian scientist and politician, b. at Friedberg, Bohemia, and studied at the univ. of Vienna, where he became prof. of physics. He was later minister of commerce and of finance, 1851. He pub. *Die mechanische Theorie der Wärme*, 1864; *Naturlehre*, 1823, and other works.

Baumgärtner, Gallus Jakob (1797-1869), Swiss statesman, b. at Altstätten. He studied at Freiburg and Vienna, and promoted the revision of the constitution of the cantons, 1831. He was a leader of the Liberals till 1841, when he joined the Ultramontane party. His writings are on historical subjects and include: *Die Schweiz in ihren Kämpfen und Umgestaltungen von 1830-50*, 4 vols., 1853-66.

Baumgärtner, Karl Heinrich (1798-1886), Ger. physician, b. at Pforzheim, and d. at Baden-Baden; he became clinical prof. at Freiburg, 1824-62. He is known for his original studies in embryology and the circulation of blood.

Baun, see BAUAN.

Baur, Ferdinand Christian (1792-1860), Ger. theologian, b. near Stuttgart. In 1825, while prof. in the theological seminary at Blaubeuren, he pub. his first important book, *Symbolik und Mythologie oder die Naturreligion des Allertums*. Next year he was appointed prof. of theology at Tübingen, where for some time he wrote mainly on mythology and allied subjects.

Das manichäische Religionssystem appeared in 1831; *Apollonius von Tyana* in 1832. But meanwhile he was coming under the influence of Hegel, whose philosophy of hist. he adopted. Between 1835 and 1847 he estab. what is known as the Tübingen school, the teachings of which were so opposed to orthodox tradition that they aroused antagonism. B. contended that the only genuine epistles of St. Paul are those to the Galatians, Corinthians, and Romans, and that these prove him to have been in opposition to Peter. B. also argued in his book on the Gospels (1847) that those, written in the first and second centuries, were adaptations from an earlier gospel, and show a desire on the part of the redactors to reconcile the opposing factions. His main argument is that Peter tried to estab. a Jewish Christianity, while Paul worked on broader lines, and that their differences influenced Christian literature for 2 centuries.

Bautain, Louis Eugène Marie (1796-1867), Fr. theologian, b. at Paris; educated at the École Normale. He became prof. of philosophy and later also of literature at Strasbourg. In 1828 he resigned to take orders, but remained in Strasbourg until 1849, when he was transferred to Paris as vicar of the diocese, and remained there until his death. He was strongly opposed to rationalism.

Bautzen, or **Budissin**, tn. of Upper Lusatia, Saxony, Germany, on R. Spree, 31 m. N.E. of Dresden. The cap. of an administrative dist. It is surrounded by turreted walls, and contains a cathedral. Has manufs. of textiles, leather, paper, and metal. Napoleon defeated the Allies here in May 1813. Pop. 40,500.

Bauxite, earthy compound of aluminium oxide, iron oxide, titanic acid, and water, in varying proportions; found in the S. of France (taking its name from Les Baux, near Arles), in Brit. Guiana (the chief Brit. source of supply), in Ireland (Antrim), and in the S. United States. Its colour varies according to the proportion of oxide. B. is valuable for the production of aluminium and its salts, of which it is the chief commercial source. As it resists heat well it is used for making crucibles and fire-bricks. See C. S. Fox, *Bauxite*, 1927; N. V. S. Knibbs, *The Industrial Uses of Bauxite*, 1923.

Bavai, tn., dept. Nord, France, 13 m. S.E. of Valenciennes. The anct. Bagacum, cap. of the Nervii. It has iron-works and marble quarries. Pop. 1800.

Bavaria (Ger. *Bayern*), Ger. state, which in area and pop. was of most importance after Prussia in the pre-war Ger. Federation. It is divided into 2 unequal parts, the one B. proper, which occupies at least eleven-twelfths of the whole area, and the other the Palatinate of the Rhine, which is divided from B. proper by the states of Baden and Hesse. B. proper is surrounded by ranges of mts. on 3 sides, the W. side being bounded by Württemberg, Baden, and Hesse. The country consists mainly of an extensive plateau, which has an average height of nearly

2500 ft. It belongs principally to the basins of the Danube and the Main. The Danube is navigable during its course of about 200 m. through B., and receives numerous tributaries, amongst which may be named the Iller, the Lech, the Isar, and the Inn, the Naab, and the Wörnitz. The Palatinate is bounded on the N. and W. by a lofty range of hills, on the E. by the Rhine, and on the S. by Alsace. The climate of B. varies considerably. Taken on an average, it is rather colder in winter than in Great Britain, but a good deal warmer during the summer and the autumn. The area of the 2 divs. taken together is 29,285 sq. m. It is divided into 8 provs.: Upper B., Lower B., Upper Palatinate, Upper Franconia, Middle Franconia, Lower Franconia, Swabia, and the Palatinate. In 1920 the former duchy of Coburg became part of B. by plebiscite. The total area is 29,486 sq. m., and the pop. (est. 1939) 8,280,000. Munich (pop. 828,325 in 1939) is the cap., and there are 4 other tns. with 1939 pops. of over 100,000 (Nuremberg, Augsburg, Ludwigshafen, and Würzburg). In the 1946 series of new states (Länder), founded by the occupation authorities, the Rhine Palatinate was included in Land Rhine-land-Palatinate (Fr. zone). Education was much improved before the Nazi regime, and the power which the clergy formerly had over the schools had been considerably decreased. There are 2 Rom. Catholic univs. and 1 Lutheran. Almost three-fourths of the pop. are Rom. Catholics, and the state is divided into 2 archbishoprics and 6 bishoprics. Protestants form nearly one-fourth of the pop., the remainder consisting principally of Jews.

Agriculture. The main products of the country are rye, oats, wheat, barley, and millet, hemp, flax, fruit, and the vine. Tobacco is also produced in some quantities, and the Palatinate produces large quantities of sugar-beet. In Central Franconia hops are produced. In the provs. of Swabia and Upper Bavaria, cattle-rearing forms the chief occupation of the people, the country here being more suited to pasture land than for the production of good crops. Almost one-third of the whole area of Bavaria is given up to forest lands. The land is held principally by peasant proprietors.

Mineral Wealth. The chief minerals of B. are coal, iron-ore, graphite, and salt. The sale of the latter used to be a gov. monopoly, which was abolished in 1867. Coal is found in almost all parts of B. There are also quarries of marble, gypsum, and good building stone. Quicksilver mines in the Palatinate still produce a good output. Porcelain clay is also found and ranks amongst the finest in Europe.

Industry. The chief pre-war industry of B. was brewing. There were more than 5000 breweries, and the output of beer was more than 100,000,000 gallons per annum, the greater part being consumed within the country itself. Roughly one-sixth of Germany's cotton industry was centred in B., and it was slowly recovering

its pre-1914 prosperity. In addition, there was a fair porcelain industry, and hardware, wooden toys, glass, cement, and spirit were also manufactured. Nuremberg was the centre of the hop trade; Augsburg of the cotton trade. The chief exports (pre-war) were corn, hops, beer, wine, potatoes, and cotton goods; the imports were mainly sugar, tobacco, cocoa, coffee, and raw cotton. The state railways and the roads were in good condition before the war, and the canal system much developed. Telegraphic and telephonic communications were also good.



E.N.A.

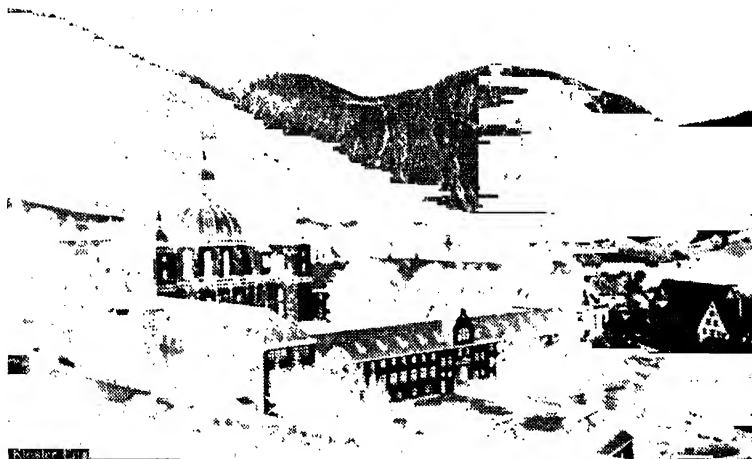
BAVARIAN PEASANT

Constitution. On Nov. 28, 1918, B., which had been a constitutional monarchy, was declared a republic. B. was a member of the Ger. Reich, and abided by the Weimar Constitution (1919-32), under which it was governed by a Diet elected by universal suffrage. The Diet was a single chamber with a minister-president whose powers were limited, and the whole gov. could be dissolved by popular vote. Foreign policy, railway, postal, and telegraphic systems were administered by the Reich. Ten delegates (one for every 700,000 inhabitants) represented B. in the Reichsrat.

History. The original inhab. of B. were probably of Celtic origin. Just previous to the beginning of the Christian era they were conquered by the Romans, and included in a Rom. prov. After the decline of the Rom. power they suffered from the inroads of the barbarians, and were ultimately conquered by the Franks. Their

dukes, during the later part of the Dark Ages, seem to have been under the control of the Frankish kings and emperors. By Charles the Great, B. was incorporated in the Carolingian empire. During the centuries which followed, B. was the scene and the cause of many quarrels between rival princes, until towards the end of the eleventh century it passed into the hands of the family of Welf. The first Welf with difficulty retained it, and passed it on to his sons, but his grandson, holding both B. and Saxony, was deprived of B., which for a short time passed back into

united B. William IV. keenly supported the Catholic Church, and was able to a very great extent to repress the progress of the Reformers. His son followed his policy, and was succeeded by William the Pious, who had been trained by the Jesuits. His son, Maximilian I., placed B. on a strong basis, reformed it internally, took an active part in the Thirty Years war, and regained for his country the addition of the Upper Palatinate. He d. in 1651, leaving B. strong and able to take her place in the councils of Europe, a thing which internal strife had forbidden



BAVARIA

E.N.A.

A monastery in the Ettal near Garmisch-Partenkirchen.

the hands of the imperial family, only, however, until 1156, when it was restored to Henry the Lion, the great-grandson of the first Welf. But Henry the Lion did not hold the duchy for long; in 1180 he was placed under the imperial ban, and deprived of his lands, which were given to a duke of the Wittelsbach family. Under the early Wittelsbachs B. increased in prosperity, but its means of territorial expansion were declining owing to the growth of neighbouring states. During the thirteenth and fourteenth centuries the possibility of B. becoming one of the great Ger. powers was stopped by the div. of the duchy into 2, and again after a short union into 6. For some time the hist. of B. is simply the record of the quarrels and wars which were the outcome of these divs. Until the beginning of the sixteenth century B. remained disunited, until in 1504 it regained its unity under Albert the Wise. After his death, again a partial div. took place between his sons, William IV. and Louis; after Louis's death, 1545, William IV. again ruled over a

during the past 4 centuries. The next reign was taken up in a judicious attempt to allow the duchy to recover from its exhaustion after the Thirty Years war. Under Maximilian's son this work was carried out, but Maximilian Emmanuel unfortunately sided with France during the Sp. Succession war and shared in the defeat at Blenheim in 1704. His dominions, lost for the time, were only restored in 1714 in a ravaged and exhausted condition. On the death of the Emperor Charles VI., untaught by the experience of 1702-14, Charles Albert devoted all his strength and power to an attempt to win from Maria Theresa the crown of Austria. Semi-successful at first, he d. in the midst of failure (1745), and his successor got back the ancestral possessions only by giving unconditional acknowledgment of the Pragmatic Sanction. For a short while B. was again allowed to attempt to recover. And in 1777, on the extinction of the Bavarian line of the Wittelsbachs, the succession passed to the elector palatine (Charles Theodore), and the

Palatinate and the duchies of Julich and Berg were united to B. This directly led to the war of the Bavarian Succession. The revolutionary wars found B. a prey to the alternate attacks of France and Austria. In 1805, however, B. was made into a kingdom by Napoleon, the title being vested in the ducal elector. B. now remained a firm ally of Napoleon until 1813, when, by a change of sides, it was confirmed by the victorious allies in all the benefits and advantages given it previously by Napoleon. In 1818 Maximilian I. presented his people with a constitution, attempting to reconcile the demand for political freedom with his newly acquired kingly rights. He started political and religious reforms and was a much-loved monarch. He d. in 1825 and was succeeded by his son, Ludwig I. He made Munich a centre of culture and art, but parliament opposed the expenditure on art, and this opposition of the Catholic party, the Ultramontanes, was inflamed by the king's love for Lola Montez, a dancer of Sp. extraction. This led to Ludwig's abdication in 1848 in favour of his son, Maximilian II. For the religious hist. of this period, see DÖLLINGER, IGNAZ VON. During the Austrian-Prussian war B. helped Austria, and had to pay indemnity to Prussia and concede a small amount of ter. In 1870 it placed its army under the command of the Prussians, and by the treaty of Versailles (1871) became an integral part of the Ger. empire with certain privileges. Ludwig II., who had succeeded to the throne in 1864, was through his madness forced to abdicate and committed suicide in 1886. His brother, Otto, also insane, became king, but Ludwig's son, Luitpold, reigned as regent until 1912. This regency marks a period of prosperity until the World War of 1914. Ludwig III. had succeeded his father as regent and on Nov. 5, 1913, was crowned king. On the same day 5 years later a Socialist meeting was held in Munich to protest against the continuance of the war. This was the beginning of the Nov. revolution, and on Nov. 8, 1918, a Soviet Gov. was set up under Kurt Eisner (q.v.). Ludwig III. fled the throne and on Nov. 13 abdicated. With the communistic Spartacists on one side and the bourgeois Majority Socialists on the other Eisner was forced to call a general election for a Bavarian constituent assembly. On Feb. 21, 1919, while on his way to the assembly, Eisner was assassinated. Chaos ensued, and out of it arose a coalition gov. with Hoffmann, a Majority Socialist, as minister-president. Owing to communist agitation Hoffmann was forced into retirement, and a Communist Soviet Republic was proclaimed in Munich by Ernst Toller, Landauer, and Levine. Hoffmann, however, was supported by Prussian troops. Munich was starved into surrender and on May 1 capitulated. After a week of bloodshed, the Hoffmann gov. was restored. Landauer was murdered, Levine court-martialled and shot, and Toller imprisoned. B. now became the centre of conservative reaction, and many of the

counter-revolutionaries of the unsuccessful Kapp revolt in Berlin (1920) sought refuge in Munich. Hoffmann was succeeded as minister-president by the bourgeois von Kahr, who, however, resigned in 1921 as a result of a conflict with the allied commission over the disbanding of the citizen guard. Count Lerchenfeld took office, but in 1922 was succeeded by von Knilling. Von Kahr, a man of strong monarchist sympathies, was made general commissioner in 1923, and he planned with General von Lossow, military dictator appointed by the Reich, and with Colonel Seisser, chief of police, to establish Bavarian nationalism. This triumvirate broke negotiations with the Reich, but were embarrassed by a movement having similar aims, only without any monarchist intentions, led by Hitler and Ludendorff. Both parties planned a march on Berlin, and Hitler forced Kahr and Lossow to join him. They went back upon their word, but when the Hitler group collapsed from its own indecision, Kahr's hopes of a dictatorship were also doomed. General von Seeckt was appointed by the Reich to restore order in B., and he came to an agreement, called the peace of Homburg, with the Bavarian minister-president, von Knilling. Later von Knilling resigned, and a coalition gov. was formed, of which Dr. Held took the lead. His policy was a vigorous assertion of Bavarian rights, while remaining, however, within the Ger. Federation. After Hitler's accession to power, the fortunes of B. were merged with those of Germany as a whole. During the Second World War Augsburg, Munich, and other tns. were heavily bombed by the R.A.F., and eventually B. was conquered by the Amer. Third Army under General Patton, which entered Regensburg in Mar. 1945. After the war B. was administered as part of the Amer. and Fr. zones of occupation. See WESTERN FRONT IN SECOND WORLD WAR.

Bibliography: *Geschichte Bayerns*, 4 vols. (Leipzig), 1898; M. Döberl, *Entwicklungsgeschichte Bayerns* (Berlin), 1916; J. Lübeck, *Die Wirtschaftliche Entwicklung Bayerns und die Verwaltung von Handel, Industrie, und Gewerbe* (Munich), 1919; A. Got, *La Terreur en Bavière* (1919-21), 1922; H. Krolger, *Aus Münchens dunklen Tagen; Zusammenbruch des Räte-Republik*, 1919; S. St. B. Baker, *A Wayfarer in Bavaria*, 1930.

Bavaria, Statue of, a colossal bronze statue, personifying Bavaria, executed by Ludwig von Schwanthaler, 1802-48, which stands nearly 63 ft. high in front of the Ruhmeshalle at Munich.

Bawean, Bawian, or Bavian Island, is off the Malay Peninsula, situated between Borneo and Java. The dist. is hilly with fertile valleys and hot springs; it is a Dutch possession. It was occupied by Jap. forces during the Second World War. Pop. 30,000.

Bawtry, tn. of W. Riding, Yorkshire, England, 8 m. S.E. of Doncaster, by rail. Pop. 1200.

Bax, Sir Arnold Edward Trevor, Eng.

composer, b. 1883, son of Alfred Ridley Bax, F.S.A. He studied composition and pianoforte at Royal Academy of Music, B., who is among the most interesting and important of Brit. composers, has been described as a Neo-Romantic, his work being characterised by a mystic feeling that owes much to long residence in the W. of Ireland. Has written almost every musical form except opera, many of his compositions being based on Irish folklore and Celtic legends. Among his many musical works may be mentioned his choral work, *Enchanted Summer*, the cantata *Fatherland*, the symphonic poems, *The Garden of Fand*, *Tintagel*, and *November Woods*, also 7 symphonies, *Overture to a Picaresque Comedy*, *London Pageant*, and numerous other publications. Oxford Univ. awarded him the degree of D.Mus. in 1934 and Durham Univ. in 1935. He was knighted in 1937, and in 1942 was appointed Master of the King's Music. His vol. of memoirs, *Farwell, My Youth*, was pub. in 1943.

Bax, Clifford, Eng. dramatist and poet, b. 1886, third son of Alfred Ridley B., F.S.A.; educated privately. He studied painting at the Slade, and lived abroad for some years until, abandoning painting, he turned to literature and drama. His first play to be produced was *The Postmasters of Ispahan* in 1912. Among subsequent productions were *Polly* in 1923, *Midsummer Madness* in 1924, *Mr. Pepys* in 1926, *The Venetian* and *The Immortal Lady* in 1931, *The Rose without a Thorn* in 1932, and *The House of Borgia* in 1935. His numerous publications include, in addition to plays, *Inland Far* (memoirs) in 1925, a monograph on Leonardo da Vinci in 1932, his collected poems, *My Muse*, in 1932, *Evenings in Albany* in 1942, and a novel, *Time with a Gift of Tears*, in 1943.

Bax, Ernest Belfort (1854-1926), Eng. journalist and philosopher. He studied philosophy in Germany, where he acted as a foreign correspondent during 1880 and 1881. In 1885 he was the co-founder with William Morris of the Socialist League, and for a time assisted in the editing of the *Commonweal*. He later joined the Social Democratic Federation, and became the ed. of its organ, *Justice*. His works on historical and socialistic subjects include *Ethics of Socialism*, 1889; *German Society at the Close of the Middle Ages*, 1894; in conjunction with William Morris, *Socialism, its Growth and Outcome*, 1894; *The Peasants' War in Germany*, 1899; *Essays in Socialism*, 1906; *The Last Episode of the French Revolution*, 1911. Later works include: *Problems of Men, Mind, and Morals*, 1912; *German Culture, Past and Present*, 1915; and *The Real, the Rational, and the Alogical*, 1920. His vol. of *Reminiscences and Reflections* appeared in 1918.

Baxa, see BUXA.

Baxar, or **Buxar**, tn. situated on the S. bank of the Ganges in the Shahabad dist., Bihar, India. Here Mir Kasim was defeated by Sir Hector Munro, 1764. It is of literary interest as the residence of writers of Vedic hymns. The trade is in

sugar, cotton, and cotton goods. Pop. 14,000.

Baxter, Richard (1615-91), Eng. divine, b. at Rowton in Shropshire, and studied under Richard Wickstead. B.'s ambition to attend a univ. was not realised. Made a brief stay at court, where he was well received, but he found the life unsuitable. Ordained deacon at the age of 21 by the bishop of Worcester; appointed to the grammar school at Dudley; became assistant to a clergyman at Bridgnorth; went as preacher to Kidderminster, the scene of his famous ministry. While siding with the Parliamentarians in the Civil war (he accepted a chaplaincy to



BAX

the Parl. army), he was a supporter of the constitutional principle of the authority of 'King-in-Parliament,' and opposed the execution of the king. He held a middle course between the Episcopalians and Presbyterians and was an advocate of 'moderate Episcopacy.' On the restoration of the monarchy he was appointed one of the king's chaplains and was twice offered a bishopric. He presented to the conference at the Savoy a reformed liturgy. On the passing of the Act of Uniformity of 1662, he was the first to give the lead to the 'ejected 2000,' and was later the first to suffer imprisonment. His brutal treatment and trial by Judge Jefferies have been immortalised by Macaulay. He retired to Acton, but after the indulgence of 1672 he returned to London. Among his best known works are: *The Saints' Everlasting Rest*, 1650; *The Reformed Pastor*, 1656; *A Call to the Unconverted*, 1657; *Care of Church Divisions*, 1670; *Methodus Theologiae*, 1681; *Catholic Theology*, 1675. He left an autobiography, *Reliquiae Baxterianae*—a favourite work with Johnson and Coleridge. This has been abridged and ed. by J. M. Lloyd Thomas as *The Autobiography of Richard Baxter* (1925, Everyman ed. 1931). Orme prefixed a life to his ed. of B.'s works in 23 vols. 1830; lives by Dean Boyle (1883) and

Dr. Fred. J. Powicke, 2 vols. (1924 and 1927).

Baxter, William (1650-1723), Eng. philologist, nephew of Richard B., *b.* at Iamlogan, in Shropshire. Pub. an ed. of Horace and a *Glossarium Antiquitatum Britannicarum*.

Baxterians, a name formerly applied to the followers of Richard Baxter, the non-conformist divine. His 2 most noted adherents were Dr. Philip Doddridge and Dr. Isaac Watts.

Bay, name applied to sev. species of the genus *Laurus*, or laurels, and also to plants which somewhat resemble laurels. The sweet B. (*Laurus nobilis*) is an evergreen plant which grows in S. Europe, and was used as the victor's laurel of olden times. The aromatic leaves are used for culinary purposes, and the berries for veterinary medicine. Red B., or *Laurus carolinensis*; white B., or *Magnolia glauca*; loblolly B., or *Gordonia lasianthus*, are natives of N. America.

Bay (Fr. *bayer*, to gape), name given to an inlet of the sea that is wider towards the open sea and narrower as it advances into the mainland. The term is often used where gulf would be more appropriate, a gulf being deeper and less variable in width than a B. In theory the character of Bs. or gulfs as territorial or free is a matter of measurement, the material point being the width at the mouth; but by anct. usage certain Bs. or gulfs, such as Conception in Newfoundland, Chesapeake, Delaware, and Cape Cod B. (Amer.), and Canale (Fr.), have a national character, though far wider than 6 m. at their entrance (6 m. being the conventional limit, as laid down in 1891 by the Institute of International Law for territorial waters generally). Various views have been expressed by jurists, e.g. defensibility from the shore, the range of one cannon shot from shore to shore (or 3 m.), a cannon shot from each shore (or 6 m.), an arbitrary distance of 10 m., and so on, so that obviously there is no agreement and could be none on a question which has become increasingly baffling with the development of aircraft and submarines.

Bayá (*Ploceus baya*), bird of the family Ploceidae or weaver birds (*q.v.*); common to India and Ceylon.

Bayadère (Portuguese *baileadeira*, female dancer), name given to the trained dancing-girls of India, the nautch girls. Some of the pantomimic dancers are attached to the Hindu temples.

Bayamo, or San Salvador, a city on the R. Cauto, in the S.E. of Cuba, founded by Diego Velázquez in 1513. Once the prin. city in the is., its trade was restricted by the choking up of the riv. by a flood in 1616. Pop. 9000.

Bayamon, tn. of Puerto Rico, situated in a fruit-growing dist., inland about 12 m. from San Juan. It was the cap. of the is. in the sixteenth century. Pop. 37,000.

Bayana, or Biana, tn. of Rajputana, India, formerly a fort, which still contains anct. ruins. Pop. 9000.

Bayan-Khara-ula Mts., Mongol name of an extensive range in E. Asia. The dist. is

little explored by Europeans, and the existence of these mts. was long only known from Chinese geographers, according to whom they lie in the centre of the E. Asian table-land, W. of Lake Kuku Nor, between 35° and 38° N. lat. and 96° and 100° E. long.

Bayard, the horse of the 4 sons of Aymon; he appears in Tasso's *Rinaldo*, Ariosto's *Orlando Furioso*, and Boiardo's *Orlando Innamorato*; the name is also given to a horse in Scott's *Lady of the Lake*, and is frequently applied to any spirited horse.

Bayard, Pierre du Terrail, Seigneur de, known by the honourable appellation 'le bon chevalier, sans peur et sans reproche' (the good knight, without fear and without reproach) (1475-1524), *b.* at the château de B. in Dauphiné, of a great military family; placed as a youth in the household of the duke of Savoy; 1494 accompanied Charles VIII. against Naples and distinguished himself at the battle of Fornovo, after which he was knighted; served in the It. wars of Louis XII.; present at the battle of the Spurs, where he was taken prisoner; the youthful Francis I. was knighted by B. on the field of battle at Marignano, 1515; mortally wounded when defending Bonniwet against an army of Charles V. See S. Shellabarger, *The Chevalier Bayard* (New York and London), 1928.

Bayard, Thomas Francis (1828-98), Amer. statesman, *b.* at Wilmington, Delaware. In 1848 he began to study law, and was called to the Bar in 1851; he was a senator, 1869-85, and became secretary of state, 1885-9. He was the leader of the Democratic party in the Senate, and was many times proposed as President. He was U.S. ambas. to Great Britain, 1893-7. See Edward Spencer, *Public Life and Services of Thomas F. Bayard*, 1880.



FLOWER

BAYBERRY

Bayazid, tn. of Turkey, near the Persian frontier and Mt. Ararat, 155 m. N.W. of Tabriz. Pop. 2000.

Bayazid I. and II., see BAJAZET.

Baybay, tn. on the W. coast of Leyte,

Philippine Is., 45 m. direct S.W. from Tacloban, the cap. of the prov.; pop. 37,000.

Bayberry, also called **Candleberry**, or **Wax Myrtle**, evergreen shrub found in the U.S.A., the W. Indies, and Cape Colony, the species being (U.S.A.) *Myrica*, especially *M. cerifera*; (W. Indies), *Eugenia acris*, a species of pimento; and (S. Africa) *Alcúrites triloba*, candle-nut tree. The last-named also grows in the Moluccas, in India, and elsewhere. The leaves of the B. are fragrant when bruised; in the W. Indies they are used for making bay rum. The berries are covered with greenish-white wax, which is collected by boiling and skimming, refined, and used

Bayern, see **BAVARIA**.

Bayeux, episcopal city of the dept. of Calvados, Normandy, France, on the R. Aure, 17 m. N.W. of Caen. It has manufs. of lace, china, and textiles, and also trades in agric. produce. During the Second World War it was occupied by the Gers., and on June 8, 1944, was the first tn. to be liberated by the allied forces following the invasion of Normandy. Pop. 8000. See also **BAYEUX TAPESTRY**.

Bayeux Tapestry, roll of linen 20 in. wide and 231 ft. long, preserved in the anct. bishop's palace of Bayeux, Normandy, upon which are worked in coloured woollen thread the events connected with the invasion and conquest of England.



BAYEUX TAPESTRY
Panel showing the death of Harold.

for making candles and scented soap. The candles while burning are very fragrant. (See illustration, p. 151.)

Bay City, cap. of B. co., Michigan, U.S.A., near the mouth of the Saginaw. It is the largest lumber-manufacturing centre in the States. Its industries include cement and alkali works. There are also coal mines and beet-sugar factories in the vicinity. Pop. 48,000.

Bayer, Gottlieb Siegfried (1694-1738), Ger. scholar, son of Johann B., b. at Königsberg; studied the oriental and Chinese languages. Some of his works were pub. in the *Memoirs of the Academy of Petersburg* and the *Acta Eruditorum*. His *Opuscula* were pub. with a life by Klotz, Halle, 1770.

Bayer, Johann (1572-1625), Ger. astronomer, b. at Rhain in Bavaria, followed the profession of a lawyer at Augsburg. In 1603 he pub. a chart of the stars, *Uranometria*, in which he included 12 new constellations of the S. hemisphere, and employed letters of the Gk. alphabet in star nomenclature. His S. constellations are said to have been derived from the observations of a Dutch navigator.

It is not, strictly speaking, tapestry, as it is worked in sampler fashion. The work is divided into 72 compartments, with descriptions in Lat., and the crude colours still retain their freshness. Various conjectures as to its origin have been made, tradition assigning it to Matilda, wife of William the Conqueror; it was more probably worked for his half-brother, Odo, bishop of Bayeux, a view which gains support from the fact that 3 of Odo's followers mentioned in Domesday Book are among the very few named figures in the tapestry. It was first mentioned in the fourteenth century, when an inventory was made of the goods in Bayeux Cathedral, which it adorned. In 1724 a drawing of a portion of it was presented to M. Lancelot, a member of the Académie des Inscriptions, and this led to public knowledge of the work. In 1803 it was sent to Paris by order of Napoleon for a short inspection, but was shortly after returned, and in 1816 Charles Stothard was sent by the Eng. Society of Antiquaries to make an accurate copy of it. His drawings of it were pub. in the sixth vol. of *Vetusta*

Monumenta in 1819. During the 1939-45 war the tapestry was placed in safe keeping first in Bayeux, and later in a château near Le Mans. After the allied invasion of Normandy the tapestry was taken to Paris by the Gers. and placed in a basement in the Louvre, from which it was recovered intact in Aug. 1944. See Jules Comte's *Tapisserie de Bayeux*, 1878; Rev. J. C. Bruce's *Bayeux Tapestry Elucidated*, 1855; and F. R. Fowkes's *Bayeux Tapestry*, 1898.

Bayf, Jean Antoine de, see BAIF, JEAN ANTOINE DE.

Bay Islands, group of is. off Honduras, discovered by Columbus in 1502. The largest is., Roatan, is 30 m. long by 9 m. broad. They were occupied by Brit. settlers in the seventeenth century, but not formally annexed until 1852. In 1859 they were ceded to Honduras. Their prin. produce consists of coco-nuts, bananas, and other fruit, which are exported to the U.S.A. Pop. 5000.

Bayle, Pierre (1647-1706), Fr. critic and philosophical writer, b. on Nov. 18 at Carlat-la-Comte, S. of France. He was the son of a Calvinist minister, and was brought up in this faith, but while at the Jesuit College of Toulouse, he made a profession of the Rom. Catholic faith, which he revoked less than 2 years later, returning to Calvinism. For this reason he withdrew, in 1670, to Geneva to study, and 5 years later he was appointed to the chair of philosophy at the Protestant univ. of Sedan. When this univ. was suppressed by Louis XIV. in 1681, he became prof. of philosophy at Rotterdam. He lost his professorship in 1693 as a result of controversy, and devoted himself to the compilation of his great dictionary, the first vol. of which under the title *Dictionnaire historique et critique* appeared in 1695, completed in 1697. The uniqueness of this work, its grace of style, the erudition and learned scepticism which it displayed, enhanced his reputation, already considerable, and a second ed. appeared in 1702. There have been many subsequent eds., notably that by P. des Malzeaux, Amsterdam, 1740, to which a life of B. was added. Among B.'s earlier works were controversial writings on theology, his letter on comets, and particularly the *Nouvelles de la république des lettres*, a species of periodical which he pub. over a number of years, devoted to literary criticism. See H. E. Smith, *The Literary Criticism of Pierre Bayle*, Albany, 1912.

Baylen, see BALEN.

Bayley, Sir Steuart Colvin (1836-1925), Brit. administrator, son of William Butterworth B., a director of the old E. India Company. First educated at Eton, but transferred to the E. India College at Haileybury and then entered the Bengal civil service. Rendered valuable services in the Behar and other famines in 1878 and later. Was Brit. resident at the Nizam's court at Hyderabad, 1881; lieutenant-governor of Bengal, 1887-90.

Baylis, Lilian Mary (1874-1937), Eng. theatrical manager. She was associated

with the introduction in 1914 of Shakespeare's plays as a permanent programme at the Old Vic Theatre, London, of which she was lessee and manager since 1898. She also leased the Sadler's Wells Theatre when it was rebuilt and reopened in 1931. Her productions here of opera in Eng. alternated with those of Shakespeare at the Old Vic. She began her career as a child violinist, and as such played both in Great Britain and in S. Africa. C.H., Hon. LL.D.

Bayliss, Sir William Maddock (1866-1924), Eng. physiologist, b. at Wolverhampton, son of an iron manufacturer. Early studied medicine, but did not complete his studies, preferring research work, which he did under Ray Lankester and Burdon Sanderson at Univ. College from 1881. Resumed medical work, studying physiology under Sanderson and later under Schäfer. It was the scientific rather than the merely anatomical side that appealed to him, and he resolved to abandon medical qualification and confine himself to physiology. Took natural science and physiology at Oxford, and after obtaining his degree resumed work under Schäfer at Univ. College, and applied himself to research with John Rose Bradford, notably in the electrical phenomena accompanying secretion. Soon after this he began research work at Guy's Hospital in the electrical phenomena of the heart and the action of the nerves on the heart and, later, carried out important research work on the vasomotor nerves (also with Bradford). As prof. of general physiology at Univ. College he took part in the teaching there. Wrote numerous papers dealing with physico-chemical problems of physiological importance, and also on the action of enzymes. His *Principles of General Physiology* (1914) is a work of outstanding significance, and reveals a catholicity of study besides a profound knowledge of its prin. topic. In 1911 he was awarded the royal medal of the Royal Society and in 1922 the Copley medal. Member of numerous foreign academies and societies.

Bayliss, Sir Wyke (1835-1906), Eng. painter, b. at Madeley; studied at the Royal Academy. He became president of the Royal Society of Brit. Art. 1888, and was knighted in 1897. His talent was directed chiefly to the delineation of interiors of cathedrals and churches.

Baylor University, Baptist educational institute, situated at Waco, Texas, formerly at Independence in the same state. It was chartered in 1845 and removed to Waco in 1882. It has about 2500 students.

Bayly, Ada Ellen, see LYALL, EDNA.

Bayly, Thomas Haynes (1797-1839), Eng. ballad-writer and dramatist, b. at Bath; educated at Winchester and Oxford. His plays and novels are now little read, but he is remembered for his once popular songs with their mild sentimentality, such as *She wore a Wreath of Roses*, *We met—'twas in a Crowd*, and *Gaily the Troubadour*. His most successful play was *Perfection*. He also wrote

2 novels, *A Legend of Killarney* and *The Aylmers*, 1827.

Bayne, Alexander (d. 1737), Scottish jurist, first prof. of law in Scotland; son of John B. of Logie in Fife. Became an advocate at the Scottish Bar, 1714; in 1722, prof. of Scots law at Edinburgh; ed. and wrote sev. works on Scots law.

Bayne, Peter (1830-96), Scottish journalist and author. He graduated at Marischal College, Aberdeen, and studied theology for the ministry at Edinburgh. He became editor of the *Edinburgh Witness*, 1856; the *Dial*, 1860-62; and of the organ of the Eng. Presbyterian Church, the *Weekly Review*. He was also associated with the *Christian World*. He wrote the *Testimony of Christ to Christianity*, 1862; and *A Life of Luther*, 1887.

Baynes, Thomas Spencer (1823-87), Scottish writer and editor, son of a Baptist minister at Wellington, Somerset. He was sent to Edinburgh Univ., where he was a pupil, and afterwards assistant, of Sir William Hamilton. In 1850 he became editor of the *Edinburgh Guardian*, and in 1853 was appointed assistant editor of the *Daily News*. Six years later he became prof. of logic, metaphysics, and Eng. literature at St. Andrews Univ. From 1873 to 1881 he was sole editor of the ninth ed. of the *Ency. Brit.*, and even when his health obliged him to resign part of his responsibility to Robertson Smith, he still continued to write, his best-known article being that on Shakespeare, since reprinted with other essays, in *Shakespeare Studies*. His other works include an *Essay on the New Analytic of Logical Forms*, 1850.

Bay of Islands: (1) Co. of New Zealand on the E. coast of North Island, named from a bay of irregular coastline on the E. side, containing numerous is., but forming a spacious and safe harbour. (2) Settlement on a large bay of the same name on the W. coast of Newfoundland, N. of St. George's Bay. It is noted for its scenery and its herring fisheries.

Bayonet, name of a short spear-like weapon of varying lengths. When not in use it is carried in a scabbard; when in use it is fixed to the muzzle of the rifle, and forms the thrusting weapon of the infantry. The original weapon is thought to have been invented at Bayonne in the seventeenth century; it was triangular in section, and had a tapering point.

Bayonne: (1) City of Basses-Pyrénées, Gascony, France, at the confluence of the rvs. Adour and Nive, 3 m. from the sea, 4 m. N.E. of Biarritz, and 18 m. N.E. of the Sp. frontier at Fuenterrabia. The rvs. divide it into 3 parts, Great and Little B., and Saint-Esprit. The harbour admits vessels of 2500 tons, but is rendered difficult of access by the bar on the Adour. The depth at its entrance at high water is 16-19 ft. The city is well built, with good quays and promenades, a medieval cathedral, and a fine citadel by Vauban. Chief industries, shipbuilding, leather dressing, distilling, and manufs. of pottery and chocolate. It was formerly famous for its hams. The city has been frequently besieged, but never taken. It

was the anct. Rom. Lapurdum. Pop. 32,000. (2) City of Hudson co., New Jersey, U.S.A., on New York and Newark Bays, 6 m. S.W. of New York. It lies just S. of Jersey City, from which it is separated by the Morris Canal, and opposite Staten Is., from which it is separated by the Kill van Kull. It is residential, but has manufs. of boilers, chemicals, paint, borax, etc., and petroleum refineries. Pop. 79,000.

Bayou (Fr. *boyau*, channel), a term originally applied in some of the S. states of N. America to a branch of a riv. or lake, but now sometimes loosely applied to streams of various descriptions.

Bay Psalm-Book, the first book pub. in the Amer. colonies. It appeared in 1640, under the guidance of Richard Mather, Thomas Welde, and John Eliot, and was a rendering into verse of the Psalms.

Bayreuth, see BAIREUTH.

Bay Rum, aromatic liquid, obtained by mixing oils of bay with alcohol, water, and oils of pimento and orange peel. It is of value as a perfume and cosmetic.

Bay State, name applied to the state of Massachusetts, U.S.A., which was estab. in 1628-30 as the Massachusetts Bay Colony.

Bayswater, dist. of London N. of Hyde Park. It is 4 m. W. of St. Paul's, and is situated on the Metropolitan District and Central London railways. Pop. 7000.

Bayida or Bahinda Steppe, desert of Nubia, Egyptian Sudan, in the bend of the Nile, N. of Khartoum, which contains sev. rocky mts. and sparse vegetation.

Bay Window, name given to a window, projecting from the front of a building, and forming part of a rectangle or polygon. If semicircular it is called a bow window. B. ws. were introduced into England about the end of the wars of the Roses, and were very common in Tudor houses. A very fine example is that of the banqueting-hall at Hampton Court. A B. W. well above ground supported by a bracket or corbel, is properly termed an oriel.

Bayse, see BAISE.

Baytown, see ROBIN HOOD'S BAY.

Baza (Rom. *Basti*), tn., prov. of Granada, Spain. It is the seat of a bishop, and was prosperous under the Moors. It is situated in a fertile valley which produces hemp, flax, fruit, and grain, and is famed for its red wines. Pop. 16,000.

Bazaar (Persian *bazar*, market), oriental name for a market-place, where various objects are exposed for sale. In the W. the term has been extended to shops which sell fancy goods, and to sales of fancy articles which are contributed gratuitously for charitable or religious purposes.

Bazaine, François Achille (1811-88), marshal of France, entered the Army as a private soldier in 1831, served in Algeria, and in 4 years became lieutenant, with the cross of the Legion of Honour. In 1839 he was a captain, and a few years later brigadier-general. He distinguished himself in the Crimean war and was

made governor of Sebastopol on its capture. Gaining fresh laurels in Italy (1859) he was appointed to a command in the Mexican expedition. Here, however, he was accused of mixing up political and personal aims with his generalship, and on returning to France in 1867 was coolly received by Napoleon III. In 1870, at the outbreak of the Franco-Ger. war he was appointed to command the 3rd Corps, and afterwards the whole Army, of the Rhine. He has been blamed for the defeat of Spicheren, when he allowed General Frossard to be beaten unsupported. B. retreated with his army to Metz, where the Prussians hemmed him in. MacMahon's attempt to relieve Metz ended at Sedan. Then came a series of obscure negotiations by B., which have never been fully explained, but which ended in his surrendering with 140,000 men; setting his besiegers free just in time to crush the great effort then made to relieve Paris. In 1873, after B.'s return from captivity in Prussia, he was court-martialled for dereliction of duty, and condemned to degradation and death, but the sentence was commuted to 20 years' seclusion. Being imprisoned in the Ile Sainte-Marguerite, he escaped thence in 1874. Fourteen years later he d. in exile at Madrid. *See* E. Peyron, *Le Cas de Bazaine*, Paris, 1905, and R. Christophe, *La Vie tragique du Maréchal Bazaine*, 1948.

Bazalgette, Sir Joseph William (1819-1891). Eng. civil engineer, b. at Enfield, Middlesex. He became chief engineer to the London Metropolitan Board of Works (1855-89); he superintended the construction of the London drainage system, 1858-75; and the Thames embankment, 1862-74. He was knighted in 1874.

Bazard, Amand (1791-1832). Fr. Socialist, b. in Paris. About 1820, while holding a small gov. appointment in that city, he organised a secret society modelled on the It. Carbonari, but a premature outbreak upset their plans and sent leaders into hiding. During enforced seclusion B. changed his projects. Conceiving that a social reform on Saint-Simonian principles would effect more than armed revolt, he began in 1828 an enthusiastic Socialist propaganda. For a time the movement succeeded, and the leaders, B., Rodrigues, Enfantin, and Carnot, quarrelled amongst themselves, and in the course of a dispute between Enfantin and B. the latter was struck down by apoplexy, and d. a few months later.

Bazardjik, or **Dobritch**, tn. in Bulgaria in the S. Dobrudja, on the railway from Constanza to Varna. Pop. 14,500.

Bazas, Fr. tn. in the dept. of Gironde, on the Beuve. Pop. 4300.

Bazeilles, vil. near Sedan, France. It was utterly destroyed with great loss of life during the Franco-Ger. war. The house where the last cartridges were fired is preserved as a memorial. Pop. 1170.

Bazentin, vil. 5 m. S.W. Bapaume, France. During the battle of the Somme in July 1916, the vil. was the

scene of hard fighting before it fell to the Brit. forces.

Bazhenov, Vassili Ivanovitch (1737-99), Russian architect, b. at Moscow. Attended School of Architecture at Moscow, 1751; one of the first pupils at the Academy of Fine Arts; came to Paris 1761 and was a pupil of Rival; went to Rome; returned to St. Petersburg, 1765. Taken into the service of the Empress Catherine, began the rebuilding of the Kremlin at Moscow, but this was not finished.

Bazigars, gipsy tribe, found all over India, bearing different names in various localities. Like European gipsies they are divided into clans, each with its own 'king.' They live by juggling, dancing, fortune-telling, basket-making.

Bazin, René François Nicolas Marie (1853-1932). Fr. writer, b. at Angers; studied law at the univ. of Paris, and was appointed to the professorship of law at Angers in 1878; elected to the Fr. Academy in 1904. His novels deal with provincial life, and he also pub. books of criticism and travel. The following may be noted: *Stéphane* (his first novel), 1884; *Une Tache d'encre*, 1888; *Sicile*, 1892; *Humble Amour*, 1894; *Terre d'Espagne*, 1896; *La Terre qui meurt*, 1899; *Donatienne*, 1903; *Charles de Foucauld*, 1921; *Le Comte de Triplet*, 1924; *Balthus le Lorrain*, 1926; *Fils de l'Eglise*, 1927.

Bazoche, *see* BASOCHE.

Baztan, or **Bastan**, valley in the Pyrenees to the N. of Pamplona in Spain. It produces Indian corn, wheat, pulse, and flax, has meadows and forests, and is drained by the riv. Bidassoa.

Bdellium, gum-resin obtained from some species of *Commiphora*, genus of Burseraceae. It occurs in masses, sometimes as large as a walnut, and is of a yellow, red, or brownish colour. Other species of the same genus yield myrrh, which B. resembles in taste and in medicinal effect.

Beach, Sir Michael Edward Hicks, *see* ST. ALDWYN, EARL.

Beach, Thomas Miller (1841-94), known as Major le Caron, Eng. spy, b. at Colchester. In 1861, at the outbreak of the Amer. Civil war, he went to New York and enlisted with the Federalists. He served till 1865, and then joined the Fenian organisation, supplying the Brit. Gov. with information. In 1867 he became a paid spy, retaining his active membership of the Fenian Society, in which capacity he remained in America till 1888.

Beaches, Raised, terraces near the sea coast which were formerly beaches, but were later raised to constitute dry land. They consist of gravelly, sandy, and shelly deposits. Such beaches are to be found in England and Ireland, but more often in Scotland, many of the coast tns., e.g. Nairn and Cromarty, being built upon them. In S. America they occur in some places at so great a height as 1200 ft. above the present sea level.

Beachy Head, cape in England, on the Sussex coast, between Eastbourne and Seaford. Its altitude is about 575 ft.,

and it forms the termination of the S. Downs. The Bell Tout lighthouse, 285 ft. above sea level, erected in 1831, was replaced in 1902 by a lighthouse at the base of the cliff, 125 ft. high. The battle of Beachy Head was fought on June 30, 1690, and gained by the Fr. fleet, commanded by the Comte de Tourville, over the allied Eng. and Dutch fleets, under the earl of Torrington and C. Evertsen. The view from the head in clear weather extends to the Isle of Wight and France.

Beacon (O.E. *bēacen*, a sign), originally a fire lighted on a high hill, or tower, for the purpose of sending messages over some long distance, or an alarm or warning. The name has been given to lofty hills, such as Dunkery B., the highest point of Exmoor, B. Hill, a height N. of Boston Common. Upon these lofty eminences the B. fires were formerly lighted, and the towers and cressets are still to be seen. The word now technically means a floating buoy, an unattended light, or any structure used for warning or guidance. The B. is built of stone, iron, or concrete, and is erected in the track of shipping in rivs., estuaries, or the open sea. One type of Eng. B. is constructed of iron plates, closely fitted together and surmounted by an iron mast, which bears a triangle or ball, etc. The B. for a sandbank is an iron tube sunk in the sand, and fitted with another tube or mast to carry the B. The Monkstone situated in the Bristol Channel is a stone tower, which is ascended by a stone stair and railed round at the top. The B. on Holy Is. is a stone obelisk. In some few cases Bs. are lighted by gas, a pipe being laid under the water and carried up to the lantern, or it may be supplied from a tank, which holds a supply of compressed gas for 4 or 6 weeks. At Stornoway the B. is built close to a lighthouse, and is lighted by a beam of light projected from the lighthouse, which by means of apparatus on the B. is reflected seaward.

Beaconsfield: 1. Mkrt. tn. in Bucks, England. It is 10 m. from Windsor and 23 from London. It is noted as the home of Edmund Waller, the poet, and of Edmund Burke; both are buried here. The earl of B. took his title from the tn. Pop. 4800. 2. Gold-mining tn. in Tasmania. 3. Tn. in Griqualand W. 3 m. from Kimberley, S. Africa, built close to the diamond mines. It is now part of the municipality of Kimberley.

Beaconsfield, Benjamin Disraeli, Earl of (1804-81), Eng. statesman and man of letters, b. at 6 John Street, Bedford Row, London, on Dec. 21. He was the son of Isaac D'Israeli, the descendant of a family of Levantine Jews. He was baptized into the Christian Church in 1817, and was educated privately. At the age of 17 he was articled to a firm of solicitors, and later entered at Lincoln's Inn in 1824, where he kept 9 terms. In 1826 he pub. the first part of *Vivian Grey*, a second part of which appeared in the following year. He quitted England in 1828 and spent 3 years in the E. In 1837 he entered

Parliament, having previously unsuccessfully contested High Wycombe in 1832 and 1834 and Taunton in 1835. Over the election at Taunton he quarrelled with O'Connell, and for some time there was talk of a duel between O'Connell's son and himself. Disraeli wrote a letter to *The Times* giving his version of the quarrel. During the decade 1830-40 he wrote a number of novels, and lived a fashionable life in the society of his time. He was credited with a number of extravagances in dress, and to such an extent was this remarked on later that he wrote to the press denying that he had committed such extravagances. He pub. a number of political pamphlets, and made no secret of the fact that he intended to go far as a politician. In 1837, on the death of William IV., a fresh election took place, and he was invited to contest Maidstone, for which constituency he was returned in that year, with Mr. Wyndham Lewis as his colleague. In Dec. of the same year he made his first speech in Parliament, and it was on this occasion there occurred that famous scene when, howled down by the House, he threw defiance in its face and warned the mockers that the day would come when they would hear him. In 1839 he pub. *Count Alarcon: a Tragedy*, and in the same month he married the widow of his late colleague, Wyndham Lewis. In her he found the sympathy and courage which were to be so necessary an asset in his life. With her fortune he was able to buy an estate at Hughenden. From the time of his failure in Parliament he awaited his opportunity, known in the House only for the bitterness with which he attacked the Whigs. By 1842 he was the leader of the Young England party. But in 1846, in Jan. of that year, by his famous onslaught against Sir Robert Peel in the Corn Law debates, he became the virtual leader of the Conservative party, though nominally it remained under the leadership of Lord George Bentinck. In 1844 had appeared *Coningsby*, in 1845 *Sybil*, and in 1847 *Tancred*, 3 political novels which were intended to explain the origin and the positions and duties of the great political parties. In 1852 as leader of the House and chancellor of the exchequer, he introduced a free trade budget which was defeated because of the extension of the house tax and income tax. On this memorable occasion he gave utterance to the dictum 'that England does not love coalitions.' In 1858 he again returned to office, but the 'fancy franchises' drove him and his party out of office for 7 years, during which he added to his reputation as a debater and a politician. In 1867 he came back into office in the third Derby administration, and then came one of the most striking political incidents, the 'leap in the dark' which 'dished the Whigs.' In that year he introduced a Reform Bill more democratic and sweeping than anything which the Liberals had introduced. In the next year he succeeded Lord Derby as the head of the administration, but at the end of the year, not having a majority, he resigned. In 1870 he pub. *Lothair*.

In 1874 he began his second administration, an administration noted chiefly for its foreign and imperial policy; in 1875 he acquired the half rights in the Suez Canal; in the following year he proclaimed Queen Victoria empress of India, and in the same year retired to the House of Lords as earl of B. The Bulgarian atrocities did not excite him to pity, but rather made him declare in face of the threatened aggression of Russia that our policy was to support to the best of our ability the sinking fortunes of Turkey. When the aggression became still more threatening he sent a fleet to the Dardanelles, voted money for war purposes, and stationed an Indian contingent at



BENJAMIN DISRAELI
EARL OF BEAUCONSFIELD

Malta. In 1878 followed the Congress of Berlin, which raised him to the greatest height of his power, and gave Russia all she wanted, and England 'peace with honour.' The wars in Afghanistan and Zululand, together with the commercial depression, gave the opposition their opportunity, and the 'imperial' policy was condemned at the general election of 1880. A large Liberal majority was returned and the Gov. resigned. In the same year appeared the novel *Endymion*. On Apr. 19, 1881, Disraeli *d.* It was proposed that he should be buried in Westminster Abbey, but the terms of his will had forbidden that, and he was buried at Hughenden. It is primarily as a statesman that his fame lives, his role as novelist being by way of understudy to the greater part. It is doubtful whether the novels, which are in many ways autobiographical, faithfully reflecting the mystical cynicism of his politics, would survive on their own merits. But they are by no means unread to-day. In manipulation of plot and in vividness of characterisation, he showed con-

siderable skill. But the purpose of his novels was always political; they revealed the dishonesty of contemporary politics, even if he himself, as has been said, was not guiltless in bringing about such state of affairs. Certain it is that *Vivian Grey* (1827) was a remarkable production for a man of 23 years of age. Yet its success was a matter of indifference to the author, for he left the country immediately afterwards to tour the Lat. countries. On his return he resumed writing, and in a period of 5 years produced a considerable number of books, beginning with his *Vindication of the British Constitution* and continuing with a number of his less known novels: *The Young Duke* (1831), *Contarini Fleming* (1832), *Alroy* (1833), *Venetia* (1837), and *Henrietta Temple* (1837). His most characteristic novels were *Coningsby* and *Sybil*, and they were strong because they were ancillary to his political convictions. As a member of the Young England party, he wanted to attack the gov. policy generally as being a break with Tory tradition. These 2 books appeared just before the Corn Laws were repealed, and they reiterated, but with greater eloquence, the opinions he had expressed in his *Vindication*; and it is clear that he used the novel form because the latter book had attracted so little attention. The lesson he tries to convey in the 2 novels is that the Tory Govs. right from the Revolution to the time of the Reform Bill, 1832, were oligarchies which had whittled away the king's prerogatives. *Coningsby*, like *Sybil*, is notable for his championship of the rights of the peasantry, which Disraeli held to have been encroached on by the Poor Law; but *Sybil* went further, and embodied his horror of the misery and squalor of the lives of the working classes in the industrial north, and there is no doubt it was effective propaganda for the cause of factory reform. In a word, the 2 novels were an expression of the new Tory gospel of the Young England party, which was the assertion of the king's prerogative and the freedom of the Church, and also of the co-equality of the rights of labour and property—which latter doctrine was so eloquently voiced in his famous 'Charist' speech, alluded to in one of the novels. Finally, *Coningsby* is also a moving plea for the Jewish race. Disraeli's *ed.* (1849) of his father's *Curiosities of Literature*, which is still read, is notable for a preface containing an account of his own family. His *Life of Lord George Bentinck* (1852) is a political study of the protectionist issue and, further, gives his answer to the legend propagated by Bentinck that Peel had hounded Canning to his grave. As a writer, Disraeli is always informative and interesting, and his style, if mannered and turgid, contains brilliant phrases and shrewd maxims. The authoritative life is that by Molyneux and Buckle, pub. in 6 vols. 1910-20, new and rev. ed. in 2 vols., 1929; see also biographical studies by T. E. Kebbel (1888), J. A. Froude (1890), H. E. Gorst (1897), E. T. Raymond (1925),

Sir E. Clarke (1926), A. Maurois (1927), D. L. Murray (1927); *Letters of Disraeli to Lady Bradford and Lady Chesterfield, 1873-1881*, ed. marquess of Zetland, 2 vols., 1929; D. C. Somervell, *Disraeli and Gladstone*, 1925.

Beadle (also **Bedel**, A.-S. *byddell*, a summoning officer), official whose function has had many variations. Originally, in Saxon times, he called householders to the moot. After the Conquest he was an officer both of the manor and of the church, but gradually developed into a par. constable. The univ. bedels, once important functionaries, now figure in official processions. At Oxford Univ. there are 4 bedels, the junior being the vice-chancellor's attendant and mace-bearer. At Cambridge Univ. there are 2 bedels, called esquire bedels, who bear maces before the vice-chancellor. In the Scottish Church the B. attends on the minister when divine service is being held.

Beadon, Sir Cecil (1816-81), Eng. administrator. He was educated at Eton and Shrewsbury, and entered the Bengal civil service at the age of 18. Later, he held important secretarial posts, ultimately becoming, at the instance of Lord Canning, lieutenant-governor of Bengal.

Beads, ornaments which have been used for decoration and barter from remote times, beautiful examples being found in early Egyptian tombs. At the present time they are still the medium of exchange with barbaric nations. They are made of gold, gems, coral, glass, etc. The manuf. of glass B. in Britain is carried on chiefly at Birmingham; on the Continent Venice is noted for the enormous variety and quantity of B. made there. In the process of manufacturing glass B., the glass is blown into a bulb, and drawn out into long tubes. The B. are then pinched or cut off, and heated in cylinders which rotate. To prevent the sticking together of the B. sand and ashes are put into the cylinders. See J. B. Littlejohn, *Beadcraft*, 1930.

Beadsman, see **BEDESMAN**.

Bead-tree, *Melia azedarach*, tropical plant cultivated for its flowers, which resemble the lilac.

Beagle, variety of Eng. hound, used in hare-hunting, there being a good number of packs in Great Britain and Ireland. It has a keen scent, powers of endurance, and intelligence. It is 10-16 in. in height, has long, thin, pendulous ears, a deep chest, and strong widely set shoulders. The coat is thick and flat and of the usual variety of colours of the hound.

'**Beagle**,' H.M.S., name of a brig of 235 tons, which, in 1831, was sent by the Brit. Gov. on an expedition, under the command of Captain Fitzroy, to survey the S. extremity of America. Charles Darwin, as a young man of 22, accompanied the expedition as honorary naturalist on the staff. The voyage lasted from Dec. 27, 1831 to Oct. 2, 1836, and an account of it was pub. by Darwin in 1839 under the title *A Naturalist's Voyage round the World*; or, *A Journal of Researches into the Natural History and*

Geology of the Countries visited during the Voyage of H.M.S. 'Beagle.' Darwin also contributed to the official narrative of the voyage.

Beak, see **BILL**.

Beaked, in heraldry, indicates that a bird has a bill which is of a different colour from the rest of its body.

Beaker (Gk. *Beke*, wine-jar), cylindrical or conical vessel made of annealed glass used in chemical operations for making solutions, in analyses, and for various other purposes.

Beal, Robert (1541-1601), Eng. diplomatist and antiquary. His early life is shrouded in some obscurity. At an early age he was by reason of his beliefs compelled to leave England during Mary's reign until Elizabeth's accession. He became Walsingham's secretary in 1570. He entered Parliament in 1572, and it devolved upon him to read to Mary Queen of Scots her death warrant. His works are voluminous, and include *Discourse after the Massacre of St. Bartholomew's*, of which he was an eye-witness; *A Book respecting Ceremonies, the Habits, the Book of Common Prayer, and the Power of Ecclesiastical Courts*; and *The Order and Manner of the Execution of Mary, Queen of Scots*.

Beal, Samuel (1825-89), Eng. scholar, b. at Devonport; educated there and at Cambridge; ordained 1852, and became a naval chaplain on board H.M.S. *Sybil*, which went to the China station. B. spent his spare time in acquiring the language; acted as naval interpreter during the war of 1856-58, and continued his studies after settling in England. His works include *The Travels of Fah-hian and Sung-yun*, 1869; *A Catena of Buddhist Scriptures*, 1871; *The Legend of Sakya Buddha*, 1875; *Texts from the Buddhist Canon*, 1878.

Beale, Dorothea (1831-1906), Eng. educationist, daughter of a London physician. In 1857 she was appointed head of the school for clergymen's daughters, in Westmorland, and 1858 took charge of the Ladies' College at Cheltenham, which she raised in a few years to very high rank. She was a deeply religious and broadminded person who did much to improve women's education.

Beale, Lionel Smith (1828-1906), Eng. physician and physiologist, b. in London; studied at King's College, where he afterwards held professorships in the medical schools (1853-96). He wrote many medical works, some of which go beyond the technical range, such as *The Mystery of Life*, 1871; *Life and Vital Action in Health and Disease*, 1875; and *Vitality and Natural Religion*, 1900.

Beale, Mary (1632-97), Eng. portrait painter, daughter of a clergyman. Cradock by name. She was taught painting by Sir Peter Lely. Her husband, Charles B., was a painter and colour-maker.

Beam (from O.E. *beam*, a tree; cf. horn-beam and whitebeam), a piece of timber, as a house-beam, a weaver's beam, etc. The cross-timbers of a ship are her beams, so that when she heels over she is 'on her

beam-ends'; hence the phrase signifying distress or difficulty.

Beam Wireless, system of wireless communication designed to increase the reliability of radio-telegraphy. It is the antithesis of omni-directional wireless, and is not affected to the same extent by atmospherics. A simple transmitting aerial, consisting of a single wire, radiates its energy in all directions, i.e. it 'broadcasts,' and only a very minute portion of this energy can be picked up at a particular point within its range. For a reliable point-to-point telephone service between 2 widely spaced countries it is necessary to concentrate the energy into a narrow 'beam' of waves, and various methods have been devised to bring this about. As early as 1900 Hertz used a parabolic metal reflector in exactly the same way that this type of reflector is used to concentrate light waves into a beam. The mechanism of electro-magnetic wave propagation is such that the physical dimensions of the reflecting system must be very large compared with the wavelengths involved. Hence this method is confined to use on very short wavelengths, say, below 0.1 metre. The formula for determining the angle of the beam is: Number of degrees = $275 \cdot 1/d$, where 1 length of aerial (invariably made equal to half the wavelength), and d = diameter of parabola opening (Fig. 1A).

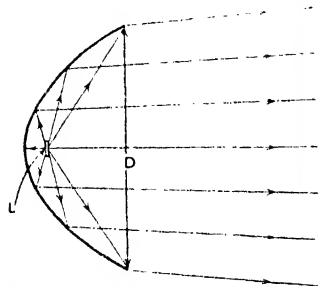


FIG. 1A. PARABOLIC REFLECTOR FOR ULTRA-SHORT WAVE

L, Aerial length equalling half of wavelength.
D, Diameter of parabola opening.

For example, if the mouth of the parabola were 5 metres (16 ft. 6 in.) and the wavelength 0.1 metres, the beam width would be approximately $2^\circ 45'$. Unfortunately, such small wavelengths are not suitable for long-distance communication, and the longer wavelengths involved (10 to 100 metres) would require parabolas of hundreds of feet diameter—an impracticable proposition. However, this method finds its application in the extremely short wavelengths, of the centimetre order, which are of great importance in modern navigational aids (see RADIO-LOCATION).

Another method of bringing about directive properties of an aerial system

is to use a number of aerials grouped in an 'array.' The type of aerial known as a 'dipole,' the physical length of which is half the wavelength being radiated, gives a radiation pattern in the form of 2 main 'lobes' on either side of the wire (Fig. 1B).

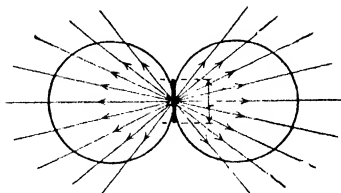


FIG. 1B. RADIATION DIAGRAM OF A DIPOLE
L, Aerial Length

By placing sev. dipoles side by side and 'feeding' all of them in phase, the radiations add up in a line at right angles to the line of dipoles, and subtract at the angles towards the sides. Fig. 1C shows this for 4 dipoles, the main lobes of radiation being about 36 in. wide. This aerial system is known as a 'broadside' array. It is also possible to feed the dipoles in such a phase as to radiate the maximum energy *in line with the aerials*, and no energy at right angles to it; this is known as an 'end-fire' array. By using more dipole elements, the beam can be concentrated still further; for example, 16 dipoles suitably arranged would be used to achieve a beam width of about

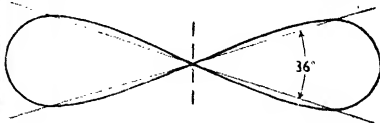


FIG. 1C. CONCENTRATION OF ENERGY BY THE USE OF FOUR DIPOLES

8 in. It must be remembered that this only concentrates the beam in the horizontal plane. If it is desired to do likewise in the vertical plane, the same principle must be applied by arranging a suitable number of dipoles stacked one above the other. Since the spacing between dipoles must also be half a wavelength, the number of dipoles that can be stacked in this way is limited by practical considerations. For wavelengths of about 25 metres, 8 dipoles could be accommodated vertically on 500-ft. masts, giving a beam width in the vertical plane of approximately 20° . A 24-dipole broadside array is shown, diagrammatically, in Fig. 1D. It is usual to employ a 'reflector,' consisting of an exactly similar array placed a quarter of a wavelength behind the main aerial. This prevents radiation from one side and increases it on the useful side. About 30 per cent reflection can be achieved in

this way. The actual direction of radiation depends on the disposition of the masts supporting the array, and for a comprehensive transmitting service the number of aërials employed is formidable. An attempt to provide movable masts was made by the Philips Radio Company

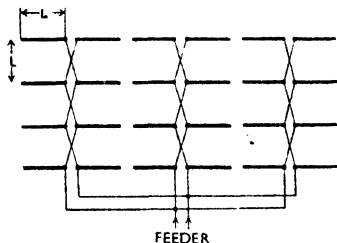


FIG. 1D. 24 DIPOLE BROADSIDE ARRAY

at Eindhoven, Holland, where the supporting framework was carried on a circular rail track. Even so, with the multiplicity of wavelengths that must be used together with the large number of countries to be served, this device would not give much alleviation in the number of aerial arrays required, and a beam wireless station is usually an enormous affair.

All forms of intelligence may be carried by beam wireless—telegraphic, telephonic, and photographic. In the United Kingdom, all 3 services are handled by Cable and Wireless Ltd., with the exception of 2-way telephone conversations, which are handled by the G.P.O. Each station comprises 2 units—one for transmitting and one for receiving—usually spaced widely apart in order to obtain the best site conditions. Both sending and receiving stations are connected by land-line to the central office of Cable and Wireless Ltd. (Eleetra House, London), which handles all the traffic, both outgoing and incoming. The 2 main transmitting stations are situated at Ongar and Dorchester, with the complementary receiving stations at Brentwood and Somerton respectively. Each station has many transmitters, and a world-wide service is maintained at all hours of the day. At some periods it is not possible, through ionospheric conditions, to cover a particular link in one direct beam. In these cases, automatic wireless relay stations have been installed where the original signal is picked up and re-radiated on a more suitable wavelength and course. An example of this is the London-Montreal service, which can be routed via the relay station installed on Ascension Island. The 2-way telephone service maintained by the G.P.O. employs an exactly similar set-up, the 2 separate conversations being combined at the central office (Faraday House, London), and thence connected in the usual way to any telephone subscriber. See also WIRELESS TELEGRAPHY.

Beaminstor, anct. mrkt. tn. and par. of Dorset, 6 m. from Bridport, situated on the Brit. It is mentioned in Domesday Book. Pop. 2000; rural dist. 8000.

Beamish, mining centre of Durham, 10 m. from Newcastle-on-Tyne.

Beamish, North Ludlow (1797-1872), Irish writer, b. at Cork; wrote on military subjects. Among his works of antiquarian value is a summary of Rafn's researches into the early Scandinavian discovery of America.

Beam-tree (*Pyrus aria*), species of Rosaceæ which grows to a height of 20 to 40 ft. in Europe and Asia. The leaves are ovate, with serrated edges, and are white and downy underneath; the flowers grow in terminal corymbs, and the small red fruit resembles a haw. It is acid and astringent, and is sometimes called sorb or service-berry. The wood is used in turning, and beer is made by fermentation of the fruit.

Bean, name given to the seeds of various plants, chiefly to those of the order Leguminosæ. The common or broad B. is known as *Vicia faba*, or *Faba vulgaris*, and has many varieties. The Fr. or kidney B. is *Phaseolus vulgaris*, and the scarlet runner *P. multiflorus*; both of these plants are grown in England, and the pods are eaten as vegetables. The latter is also used as an ornamental climber. *P. lunatus*, the Lima B., is a native of S. America, with broad flat pods, and short flat seeds. *P. mungo*, the mungo B. or green gram, and *P. radiatus*, the black gram, are Bs. which are given to horses. *Dolichos biflorus* is also called the horse-gram in India, and is excellent food for cattle, while the pods of *D. lablab*, the lablab B., are cooked for human consumption after the manner of kidney beans. Both *Glycine soja* and *G. hispida* yield soya Bs. (q.v.). *Cerantia siliqua* is the Mediterranean species known as the locust or carob B.; *Vigna sinensis* is the cherry-B. or cow-pea of tropical Asia; *Mucuna utilis*, the tropical velvet-bean; *Canavalia ensiformis*, the sword or sabro B. of India; *Physostigma venenosum*, the ordeal B. of Calabar.

Of a few plants which are not leguminous, but whose seeds are known as Bs., may be mentioned *Nelumbium speciosum*, the Egyptian or sacred B. eaten in Cashmere; *Strychnos ignatii*, St. Ignatius's B., with poisonous properties; *Menyanthes trifoliata*, the bog- or buck-B. of Europe, Asia, and N. America. The bean-caper is an E. plant, *Zygophyllum fabago*, whose flower-buds are eaten as capers.

Bs. have value as food on account of the nitrogenous or proteid matter they contain. As forage for horses, cows, sheep, and pigs they have fattening and heat-giving properties. The enemies to which they are subject are 2, fungi and insects. When attacked by fungus the Bs. can still be used as rich manure, and if by the B. aphid, or black dolphin, they can often be saved by having their tops cut off. They grow best in warm, light, well-manured soil, and enrich the ground themselves for future use.

Bean-feast, name derived from an old custom prevalent in W. Europe in connection with Twelfth Night festivities. A bean was hidden in a cake, and the person who got the slice containing it was 'king' of the revels. Though the festival was a religious one (the feast of the Epiphany), it was an adaptation from paganism. The bean-king (or he who had the good luck to get the slice of cake with the bean) was master of the revels (cf. lord of misrule). Originally he may have reigned for the 12 days from Christmas to Twelfth Night, his chief function being to perform the propitiatory rites to ensure good weather. During the Rom. Saturnalia, said to have been estab. by Tullus Hostilius (c. 650 B.C.), but probably older, children drew lots with beans to decide who should be king. This was a winter festival, and with alteration of date was christianised into the feast of the Three Kings. See Brand's *Popular Antiquities of Great Britain* (Hazlitt's ed., 1905), under 'Twelfth Night.'

Bean Goose (*Anser segetum*), species of European wild goose with a short, black and red beak, which obtains its name from the resemblance of the upper nail of its bill to a horse-bean, or else from the fact that it eats the beans sown in the spring. It is of a grey colour, and breeds largely in the Hebrides.

Bean-king's Festival, see BEAN-FEAST.

Bean-tree, species of 2 genera of Leguminosæ which occur in the tropics. *Castanospermum australe*, also known as the Australian chestnut, has edible seeds which resemble chestnuts in flavour when roasted. *Erythrina corallodendron* is the other species, which is a native of Jamaica.

Bear, Bere, or Beer, a common name for the 4-rowed variety of barley (q.v.).

Bear, genus of widely distributed carnivorous (often omnivorous) mammals of the family Ursidae and div. Arctoidea. They are large, ungainly animals, with short tails, shaggy fur, plantigrade feet, curved claws which are non-retractile, broad elongated heads ending in a snout. Their usual method of progression is on all fours, but they are capable of walking upright with a clumsy, shuffling gait, and most of them are climbers. They do not attack man unless provoked, but when roused they are ferocious; in their strong arms they can hug a human being until suffocated. Though they sometimes eat flesh, they prefer fruit and honey, and some species are fond of termites, or white ants. Most Bs. eat largely during the summer months, and then hibernate, coming out again in the spring in a weak but fierce state. During the winter months the cubs are b., and unless carefully guarded by their watchful mothers they fall a prey to the greed of their fathers. The young are blind at birth.

The various species have many dissimilar points. The brown B. (*Ursus arctos*) is spread through all the int. dists. of Europe, from the Arctic circle to the Alps and Pyrenees, and is also found in Asia. It is about 6 ft. long and 3 ft. high at the shoulders, yet it can easily climb rocks and trees; it can attain the age of

50 years. The fur of this animal is of a yellowish colour in youth. The Amer. black B. (*Ursus americanus*) is a smaller species than the brown B., of which it is thought to be a variety. It is an object of veneration among the Indians. The grizzly B. (*U. horribilis*) is a native of N. America; it is large, strong, and fierce, has powers of endurance, and is a great hunter. The polar B. (*U. maritimus*), found in the Arctic regions, is the largest species, attaining a height of 9 ft., and lives on seals and fish. The spectacled B. (*U. ornatus*) is a smaller species with ringed eyes, found in the Andes; and the sloth B. (*Melursus labiatus* or *ursinus*) dwells in mountainous parts of India and lives chiefly on termites.



BROWN BEAR

Bear Animalcules, see TARDIGRADA.

Bear-cat, see PANDA.

Bear, The Great and Little, see URSA MAJOR and URSA MINOR.

Bear-baiting, sport consisting of teasing a tethered bear by setting dogs to bite it or by beating it with sticks. The bear was often blinded beforehand. It was in favour with the anc. Roms., and was popular in England from Norman times down to the eighteenth century. Private bear-gardens, or baiting-places, were kept by nobles and gentry, besides those provided by caterers for popular amusement, such as the famous 'Bankside,' where the charges were 'a penny for admission, a penny at the entry of the scaffold (i.e. stage), and a penny for quiet standing.' Mary Tudor and Elizabeth were both fond of witnessing this sport. The Privy Council in 1591 ordered all theatres to be closed every Thursday, because baitings generally took place on that day, and actors could not be allowed to prejudice such entertainments by their competition. Another favourite day was Sunday, which was a further reason for the Puritan interdiction of such sports. Bear-baiting and bull-baiting were finally banned by Act of Parliament in 1835.

Bearberry (*Arctostaphylos*), genus of Ericaceae which grows in Alpine regions and in N. America. *A. alpina*, the black B., is not so common as the evergreen *A. uva-ursi*, red B., or bear's whortleberry, but both grow in mountainous parts of England and Scotland.

Bear Lake, Great, freshwater lake in the N.W. of Canada. Its shape is irregular, and it has an area of over 11,000 sq. m. The water is transparent and abounds with fish, especially the so-called herring salmon. It has an outlet in the Great Bear R., which flows into the Mackenzie.

Bear River, stream about 450 m. long, rising in the Rocky Mts., and flowing after a circuitous course through Utah and Idaho, into Great Salt Lake. On its banks are mineral springs containing magnesia.

Beard, name given to a growth of hair on a man's cheeks and chin. The fashion of the B. varied considerably in various times and countries. Though Pliny says the Romans did not begin to shave until A.D. 454, yet in later times the first day of shaving was considered as the entrance to manhood and was kept with festivities. Caesar says that the ancient Britons left the hair long only on the upper lip. The Saxons wore Bs., but the Normans shaved the whole of the face. The sepulchral monuments of kings and nobles show that for many centuries the B. was in fashion, but since the seventeenth century the practice of shaving has become more and more general in Europe and America.

Beards in S.W. Arabia. In S.W. Arabia clean-shaven faces that could grow Bs. are considered effeminate, and are frowned upon by the tribesmen. According to the ulema the B. may not be shaved but can be trimmed. Moustache only is rare and considered not unmanly, but to be in imitation of Christians and, as such, indicates a townsman of Lahaj or Aden and a bad Muslim. Some seyyids in the Hadhramaut shave the B. This is not approved by the tribesman, but the seyyids look upon shaving as a sign of civilisation. To seize a man's B., or even to flick it is considered a deadly insult. 'God burn his beard' is a frequent exclamation of dislike. The B. is touched or held when swearing by God or as a mark of silent reproof. Trimmings from the B. are carefully concealed as it is considered that their possession by an enemy, who might burn them, is a grave danger. To kiss the tip of the fingers and then to touch another's B. with them is a mark of suppliancy and respect. An Arab will describe his B. as his *sherraf* or personal honour. The B. is regarded as a mark of distinction and masculinity. 'Abu Dagan' (father of a chin-tuft) is a nickname of respect applied to men with particularly well-grown Bs. The oath 'by the beard of the Prophet' is a powerful one. Frequently, before pronouncing judgment, the B. will be touched held or stroked in a contemplatory gesture. An Arab will seize his B. between thumb and forefinger to emphasise his remarks in a quarrel. Beardless youths often imitate the gestures of their bearded seniors,

holding invisible Bs., nor is the gesture considered comic.

Beard, Charles Austin (b. 1874), Amer. historian, b. Knightstown, Ind., U.S.A. Educated at various Amer. univs. and at Oxford Univ., England. Was prof. of politics at Columbia Univ. 1915-17; adviser to the Institute of Municipal Research, Tokyo, Japan, 1922; adviser to Viscount Goto, Jap. minister of the interior, after the great earthquake of 1923. Among his prin. works are: *Introduction to the English Historians*, 1906; *American Government and Politics*, 1910; *Economic Interpretation of the Constitution*, 1913; *Contemporary American History*, 1914; *History of the American People* (with W. C. Bagley), 1918; *History of the United States* (with his wife), 1921; *The Rise of American Civilisation* (with his wife), 1927.



A DECORATION FROM BEARDSLEY'S
'LA MORTE D'ARTHUR'

Beard, George Miller (1839-83), Amer. physician, b. in Connecticut. After serving in the U.S. Navy for some years he settled in New York and became famous as a specialist on the treatment of nervous diseases, on which he wrote sev. works, his last being the *Study of Trance*, 1882.

Beard, John (1716?-81), Eng. actor. He received a musical training and gained some reputation as a singer at Covent Garden. Loss of hearing caused his career to come to an end in 1767. Some of Handel's finest tenor parts were composed for B.

Beard, Thomas (d. 1632), Eng. divine. He was educated at Cambridge. Soon after the acceptance of the rectory of Hengrave, Suffolk, B. became headmaster of Huntingdon hospital and grammar school, where he was Oliver Cromwell's schoolmaster. He wrote *The Theatre of God's Judgements*, which contains an account of Marlowe's death.

Bear'd Grass, name given to a species of *Polygonum*. This genus of Gramineae is seldom found in Britain and is a native of warm and tropical countries.

Bear'd Moss (Fr. *barbe de vieillard*) belongs to the genus *Usnea* of lichens. It creeps over stems and branches of trees, hanging down in thick trails, whence its name.

Beardsley, Aubrey Vincent (1872-98), Eng. artist, b. at Brighton, d. of consumption at Mentone. Worked for various illustrated papers at the age of 20; and next year illustrated the *Morte d'Arthur*, which at once assured his fame. He was art editor of the *Yellow Book*, but was elbowed out of that position; he joined with Arthur Symonds in 1895 to edit the *Savoy*, a rival to the *Yellow Book*. He illustrated *The Rape of the Lock*, Oscar Wilde's *Salomé*, *Made-moiselle de Maupin*, and Ernest Dowson's *Pierrot of the Minute*. He was at work on initial letters for *Volpone* 3 weeks before he d. His line drawings were delicate and exact, and showed that fastidious elegance that appears even in the most grotesque of his drawings. He worked almost entirely in black and white. See Arthur Symonds, *Aubrey Beardsley*, 1898; R. Ross, *Aubrey Beardsley*, 1908.

Bearer Securities, in commerce or banking practice, any draft, cheque, bill, note, etc., the presentation for payment of which by the bearer entitles him to receive a certain sum of money. Most B. S. have become negotiable by custom; but in order to be so negotiable in Great Britain an instrument must be customarily transferable in this country, like cash, by mere delivery. In the case of Eng. instruments it has been held that they cannot become negotiable by custom and usage except by the ant. law merchant (*q.v.*), and that modern usage cannot make an instrument negotiable. But the better opinion is that this is no longer good law; and it has now long been decided that debenture bonds payable to bearer have by modern usage become negotiable instruments.

Bearing, the direction of a line drawn from one point to another, is a term usually employed for the points of the compass; e.g. if the point B. is due N.W. of A. it is said to bear N.W. of A. and its B. is said to be N.W. To take B. is to ascertain the points of the compass on which points lie.

Bearings, see BALL BEARINGS.

Bear-leader is a term used jestingly of a person who is in charge of a young man of wealth when making a tour of the world, or of one who acts as guide to a celebrity. It arose from the custom of leading about a tame bear, nuzzled and on a chain, for entertainment.

Béarn, anct. prov. of France, now included in the dept. of Basses-Pyrénées. Its cap. was Pau.

Bear's Breech, name sometimes given to the genus of Acanthaceae known as *Acanthus* (*q.v.*).

Bearsden, a residential suburb of Glasgow. Pop. 14,000.

Bear's Foot (*Helleborus foetidus*), species of Ranunculaceae in Europe; related to the Christmas rose.

Bear's Grease, or **Bear's Oil**, name applied to various pomades which are said to promote the growth of hair. B. G. is believed to strengthen the hair. These preparations are usually manuf. from beef-marrow, lard, spermaceti, or a vegetable oil, together with an agreeable scent.

Bear's Whortleberry, see BEARBERRY.

Bearded, Marcus Samuel, first Viscount (1853-1927), Eng. oil magnate. Began in a modest way of business as a representative in Japan for the shipment of oil from Baku to the E. In 1897, he secured cap. from the Rothschilds for the purpose of grouping a number of concerns under the style of the Shell Transport and Trading Company, which, later, became amalgamated with the Royal Dutch Petroleum Company. Was lord mayor of London in 1902.

Beas, or **Bias**, riv. of the Punjab, India. It rises in the Himalayas and flows into the Sutlej. The Beas and lower Sutlej formed the Hyphasis, which marked the farthest progress of Alexander the Great.

Beast, Number of the, see APOCALYPTIC NUMBER.

Beastlings, see BEESTINGS.

Beatenberg, or **Saint Beatenberg**, summer health resort situated on the wooded heights to the E. end of the lake of Thun, Switzerland.

Beath or Baith, par. of Scotland, situated in the co. of Fife. It is 5½ m. N.N.W. of Aberdour. Most of its inhab., numbering 4400, are engaged in its coal and iron mines.

Beatification, the act by which the Pope permits a 'venerabilis servus Dei,' one whose name has been brought forward as worthy of B., i.e. to be entitled to be called 'blessed' (*beatus*). The privileges contain various limitations, and B. is generally only preliminary to canonisation (*q.v.*).

Beating the Bounds, or **Perambulation**, is a custom common to sev. European nations under different forms. In England, on Holy Thursday or Ascension Day, the clergyman of the par., with some officers and boys, still continues to walk in procession to each of the different par. boundaries, and when there the boys beat the boundaries with peeled willow-wands in order to remember their location. Sometimes the boys themselves were the objects of castigation and received a little money for their pains. This ann. ceremony, held to preserve the limits of a par., may be compared with the Rom. festival, Terminalia, celebrated on Feb. 23. In Scotland, alternative names are 'riding the marches' and 'common riding.' At Shrewsbury it was called 'bannering,' and

the custom was kept up till the middle of the nineteenth century. In recent years there has been a revival of the custom in some parts, including some in the city of London. See Brand's *Popular Antiquities*.

Beaton, or Bethune, Cardinal David (1494-1546), Scottish prelate, younger son of John B., or Bethune, of Balfour in Fife. He went to France to study civil and canon law, and in 1519 was appointed resident for Scotland at the Fr. court. In 1533 B., now prothonotary apostolic (a high office in the church), was sent as an ambas. to France to treat for a league with the Fr. king and a marriage between James V. and Princess Magdalene. In 1537 he procured the papal bull for the erection of St. Mary's College at St. Andrews; in 1538 became a cardinal, and 1539 primate of St. Andrews. At the death of James V., 1542 B. produced a will in which he was stated to be appointed regent for the infant daughter of the dead king; this was a forgery, and James, earl of Arran, became regent. B. still had great influence, and with the help of the nobles forced the regent to abjure the doctrine of the Reformation. The following year Mary Queen of Scots was crowned, and B. became chancellor. In 1546 he tried and condemned George Wishart to be burnt. He opposed the designs of Henry VIII. of England for the marriage of Mary to his son Edward, and that monarch characteristically expressed a desire that B. should be assassinated, and B., after witnessing the marriage of his illegitimate daughter to the earl of Crawford, was put to death by a party of reformers.

Beaton, Bethune, or James (d. 1539), Scottish prelate, uncle of Cardinal David B., was lord treasurer of Scotland, archbishop of Glasgow, 1509; chancellor, 1513; and archbishop of St. Andrews and primate, 1522. As one of the regents during James V.'s minority, he was a chief mover in the Fr. alliance. Patrick Hamilton and other reformers were burned during his prinary. He d. 1539. Another James B. (1517-1603), was a nephew of the cardinal. He was in the confidence of Mary of Lorraine when regent, and was the last Rom. Catholic archbishop of Glasgow, 1552 to 1560, when he fled to France, taking with him the archives of the see, which have never been recovered.

Beatrice (1266-90), daughter of Folco Portinari, a wealthy Florentine. She is identified with the girl of 8 years of age whom Dante met at her father's house on May Day, 1274, when he himself was 9 years old. He relates the story of his love for her in the *Vita Nuova*. It is probable that he did not declare his passion, and that they did not meet many times. She married Simone de' Bardi, and d. on June 9, 1290. She remained Dante's inspiration, and the *Paradiso* tells of their meeting in paradise.

Beatrice, Princess (1857-1944), youngest daughter of Queen Victoria. In 1885 she married Henry Maurice, Prince of Battenberg. (See **BATTENBERG**.) She had 3

sons, the eldest of whom was made marquess of Carisbrooke, and her daughter, Victoria Eugénie, married King Alfonso XIII. in 1906, and was queen of Spain until her husband's abdication in 1931. Her second son, Leopold, d. in 1922, and her third son, Maurice, d. of wounds received during the war in 1914. Her sons, in 1917, took the name of Mountbatten.

Beatrice, a city and co. seat of Gage co., Nebraska, U.S.A. It is situated in the valley of the Big Blue R., and has a trade in dairy produce. Pop. 10,880.

Beattie, James (1735-1803), Scottish poet and philosopher, b. at Laurencekirk in Kincardine; entered Marischal College, Aberdeen, where, in 1760, he became prof. of moral philosophy and logic. In 1770 he pub. his *Essay on the Nature and Immutability of Truth, in Opposition to Sophistry and Scepticism* to confute Hume. Johnson, always zealous for Christianity, praised it at the expense of Hume, who estimated the ephemeral effusion at its true worth, and refrained from answering it, beyond saying that he 'had not been used like a gentleman.' George III. received B. with great warmth, and his fortune was made. Sir Joshua Reynolds introduced B. in a metaphorical painting as the Defender of Truth, with Hume and Gibbon skulking low with diabolical faces. In 1771 B. pub. *The Minstrel*, a poem for which alone he is remembered, and in 1773 received a pension. He d. of palsy. Life by Sir Wm. Forbes, 1807.

Beattie, William (1793-1875), Eng. doctor, poet, and classical scholar. He was b. at Dalton, Annandale. He entered Edinburgh Univ. as a medical student in 1812. For 14 years he attended the duke and duchess of Clarence. He practised at Hampstead for 18 years, and afterwards travelled in Switzerland and the land of the Waldenses. He pub. illustrated works on the Danube and Switzerland.

Beattook, vil. situated 2 m. S.W. of Moffat, in N. Dumfriesshire. It forms the junction on the railway for Moffat.

Beatty, David, first Earl (1871-1936), Brit. admiral, b. Jan 17, second son of David Longfield B., of Borodale, co. Wexford; educated at the Royal Naval Academy, Gosport, and entered the Navy as a cadet in 1884. He became lieutenant, 1892; and served in Egypt and the Sudan with the naval brigade—being in the expedition to Dongola in 1896 (received D.S.O.), and being present (1897-98) at the battles of Atbara and Khartoum. Became commander, 1898. In the expedition to China in 1900 on account of the Boxer rebellion, he was wounded, and promoted captain. He was made rear-admiral in 1910, and in 1912 became naval secretary to the First Lord of the Admiralty (Winston Churchill). In 1913 he took command of the battle-cruiser squadron, and, when the First World War broke out, he conducted the first move at sea against Germany—the raid into Heligoland Bight, Aug. 28, 1914. On Jan. 24, 1915, at the Dogger Bank he intercepted von Hipper, coming

to bombard the E. coast. The same year he was made vice-admiral. He again encountered von Hipper at the battle of Jutland, May 30, 1916, whose fleet he successfully deflected from its course. This indecisive battle was followed by some div. of opinion in the Fleet as to the merits of Jellicoe and B., and the controversy spread to the press. Even the publication of Sir Julian Corbett's last vol. of the *Official History of the Great War Naval Operations* (1920) did not satisfy public opinion. In his *The Jutland Scandal* Admiral Sir Reginald Bacon (q.v.) accused B. of incompetence and inexperience. Two other books, *The Truth about Jutland* by Admiral Harper, who was entrusted with the task of producing a report on the battle, and *The Riddle of Jutland* by Admiral Harper and Langhorne Gibson, expressed the view that the conduct of the battle by Jellicoe was wise and well judged, while B. was criticised for neglecting the training of his command in gunnery and signalling, and for the rashness of his handling of it in action. See also JUTLAND, BATTLE OF. On Jellicoe becoming First Sea Lord, Dec. 1916, B. was made commander-in-chief of the Grand Fleet, a position he held till the end of the war. On board his flagship, the *Queen Elizabeth*, at Scapa Flow in the Orkneys, Nov. 16, 1918, he received from Rear-Admiral Hugo von Meurer the surrender of the Ger. Grand Fleet, which von Reuter soon afterwards sank. In 1919 he was made admiral, and admiral of the fleet; he also became First Sea Lord of the Admiralty. Between then and 1927, he conducted the reduction of the Navy to a peace footing; and he was Brit. delegate to the Washington Conference on the Limitation of Armaments, 1921. In May 1901 he married Ethel, daughter of Marshall Field of Chicago, by whom he had 2 sons. He was awarded the G.C.B. and O.M., and held many foreign decorations. His peerage was conferred on Sept. 27, 1919, when he took the title of Earl Beatty, Viscount Borodale, and Baron Beatty of the North Sea and of Brooksby.

Beaucaire, tn. in the dept. of Gard, S.E. France. It is situated on the Rhône, at the head of the canal de B. The manufs. are silk, woollens, and leather. There are stone quarries in the neighbourhood. Pop. 9000.

Beauce, co. in the prov. of Quebec, Canada. It lies to the S.E. of the prov., on the N. frontier of the U.S. The Notre Dame Mts. are in the dist. and also Lake St. Francis.

Beauce, La, is a dist. in central France, with an area of 2800 sq. m. It includes part of Eure-et-Loir and Loir-et-Cher.

Beauchamp, name of an anct. and noble family of England. The founder, Walter de Beauchamp, obtained large estates in Worcestershire by his marriage with the daughter of one of the Conqueror's barons; from him descended William of Elmley (whence this family is styled the Beauchamps of Elmley), whose marriage with the heiress to the earldom of Warwick in 1268 brought Warwick Castle and

the earldom to his son. Of the B. earls of Warwick commemorated in the famous B. Chapel in St. Mary's Church, Warwick, the prin. was Guy the 'black cur of Arden,' the enemy and executor of Piers Gaveston, and one of the lords ordainers in the opposition to Edward II. He d. in 1315. His sons, Thomas and John, were 2 of the first garter knights, and Thomas was one of the Lords Appellant, and imprisoned in the B. Tower of the Tower of London. The last B. earl of Warwick d. in 1445, and his sister, Anne, brought the earldom to the Nevilles on her marriage with Richard, the king-maker. The present Earls B. are descended from William Lygon (1747-1816), who claimed descent through the female line from a cadet branch of the anct. family, the Bs. of Powyck. The viscounty of B. of Hache, granted to Edward Seymour, Lord Protector Somerset, belonged to a distinct family in Somersetshire. The title remains with the marquess of Hertford, and the name in the family of the B. Seymours.

Beauchamp, Alphonse de (1767-1832), Fr. historian, b. at Monaco; joined the Sardinian army, and was imprisoned for refusing to serve in the war against the Fr. Republic. He came to Paris and obtained a gov. post at the ministry of police at the head of the press bureau. In 1806 he pub. his historical work, *Histoire de la Vendée et des Chouans*, which led to his retirement to Rheims. He returned to a post in 1811, which he resigned at the Restoration. Other works are: *Vie du général Moreau*, 1814; *Mémoires secrets et inédits pour servir à l'histoire contemporaine*, 1825. He only revised Fouché's *Mémoires*, often attributed to him.

Beauchamp, William Martin (1830-1925), Amer. ethnologist and clergyman, b. at Coldenham, N.Y. Among his works may be named *The Iroquois Trail*, 1892; *Aboriginal Chipped Stone Implements of New York*, 1897; and *History of the New York Iroquois*, 1905.

Beaulerk, Topham (1739-80), the friend of Samuel Johnson, and member of the famous Club. He was a grandson of the first duke of St. Albans. His wit, his taste in literature, and knowledge as a man of the world, endeared him to Johnson, and he figures largely in Boswell's life. See also John Forster's *Life of Goldsmith*, 1854.

Beaufort: (1) cap. tn. of Carteret co., N. Carolina, U.S.A. It is situated at the mouth of Newport R., S.W. of Cape Lookout, has a good harbour, and is a summer resort. Pop. 3000. (2) Cap. tn. of B. co., S. Carolina, U.S.A., situated on Port Royal Is., on the B. Riv., 16 m. from the sea. It has a harbour. Its climate has made it a popular winter resort. The 'rock-river' phosphate beds near B. are important. The tn. was first permanently settled, 1710, and was named in honour of Henry Somerset, duke of Beaufort. Pop. 3000.

Beaufort, tn. in the Maine-et-Loire dept., France, with a trade in corn, fruit, and linon. Pop. 3000.

Beaufort, name of a noble Eng. family, members of which were earls and dukes of Somerset and earls and marquesses of Dorset; also the title of a dukedom, borne by members of the family of Somerset, descended from the Bs. The name of B. was borne by the children of John of Gaunt by Catherine Swynford, who were legitimated after their parents' marriage in 1396. Of these, John (*d.* 1410), earl of Somerset and marquess of Dorset, was a supporter of Richard II. against the lords appellants; Thomas (*d.* 1426), duke of Exeter, was one of Henry V.'s generals; Henry (*d.* 1447) was bishop of Winchester and cardinal (*see* BEAUFORT, HENRY). Margaret was daughter of John, third earl of Somerset (1403-44) (*see* BEAUFORT, MARGARET). Three successive Bs., earls and dukes of Somerset, were killed or beheaded during the wars of the Roses, supporting the house of Lancaster. Charles, the illegitimate son of one of these—Henry, third duke of Somerset, beheaded after Hexham, 1464—was a favourite of Henry VI., and made earl of Worcester; his descendant, Henry, fifth earl, was a loyal supporter of Charles I., and was made a marquess in 1642; in 1682 the third marquess was made duke of B., the title now held by the tenth duke.

Beaufort, Henry (c. 1377-1447), Eng. cardinal and bishop, was the son of John of Gaunt and Catherine Swynford, *b.* out of wedlock but legitimated in 1397 (*see* BEAUFORT, family). He entered the Church and was made bishop of Lincoln in 1398, and on Henry IV. attaining the throne he became chancellor, 1403, and bishop of Winchester, 1404. He was also chancellor in 1413, and in 1424. During the reign of Henry V. and the minority of Henry VI. he was the leader of the party opposed to Humphrey, duke of Gloucester, especially in the matter of making peace with France. In 1426 he was made a cardinal by Martin V., for whom he had voted in 1417 at the Council of Constance, and was sent as papal legate to conduct a crusade against the Hussites in Hungary and Bohemia. He crowned Henry VI. as king of France in 1431. Charges were made against him by Gloucester, and attempts to deprive him of his see failed. He refounded and endowed the hospital of St. Cross near Winchester, which still exists, and on sev. occasions advanced large sums of money to the crown. He *d.* at Wolsey Palace, Winchester. *See* L. B. Radford, *Henry Beaufort*, 1908.

Beaufort, Louis de (*d.* 1795), Fr. historian. Little is known of his life. He was one of the first writers who questioned the trustworthiness of the classical historians in the early hist. of Rome. His works include: *Dissertation sur l'incertitude des cinq premiers siècles de l'histoire romaine*, 1738, second ed., 1750; *Histoire de César Germanicus*, 1761; and *La République romaine*, 1766.

Beaufort, Margaret, Countess of Richmond and Derby (1443-1509), was the daughter of John, Duke of Somerset (*see* BEAUFORT, family), and married, in 1455, Edmund Tudor, earl of Richmond, by

whom she was mother of Henry, earl of Richmond, afterwards Henry VII., whose title to the throne came to him through his mother as descendant of John of Gaunt. After her husband's death she married Henry, son of the duke of Buckingham, and Thomas Stanley, earl of Derby. She founded the Lady Margaret professorships of divinity at Oxford and Cambridge, and founded by will St. John's and Christ's Colleges, Cambridge. *See* E. M. Routh, *Lady Margaret*, 1924.

Beaufort Scale, scale of numbers for recording wind velocity at sea, invented in 1805 by Admiral Sir Francis Beaufort. It consists of the numbers from 0 to 12, each number representing a certain strength or velocity of wind from calm to hurricane. The International Meteorological Committee have long adopted the scale as a part of the code for communicating weather conditions. The numbers wind represented, and velocity in m.p.h. are as follows: 0, calm, 0; 1, light air, 1-3; 2, slight breeze, 4-7; 3, gentle breeze, 8-12; 4, moderate breeze, 13-18; 5, fresh breeze, 19-24; 6, strong breeze, 25-31; 7, high wind, 32-38; 8, gale, 39-46; 9, strong gale, 47-54; 10, whole gale, 55-63; 11, storm, 64-75; 12, hurricane, above 75.

Beaufort Testimonial, result of a subscription raised in 1860 to commemorate the services of Sir Francis Beaufort (1774-1857), rear-admiral, to the Brit. Navy. It took the form of an ann. prize awarded to the cadet of the Royal Naval College who, as a candidate for the rank of lieutenant, passed most successfully his examination in navigation and kindred subjects.

Beaufort West, tn., cap. of B. W. div., Cape prov., S. Africa, 339 m. N.E. of Cape Town on the line to Kimberley. It lies 2792 ft. high, on the S. slopes of the Nieuwveld Mts., and is the largest tn. in this part of the Great Karroo. Pop. (tn.) 5000.

Beaugency, tn. of France in the Loiret dept., situated on the r. b. of the Loire, which here is spanned by a bridge of 26 arches. It is about 16 m. S.W. from Orleans. The manufs. are woollens and leather, and a trade is carried on in grain, wheat, and wine. Pop. 3300.

Beauharnais, Alexandre, Vicomte de (1760-94), Fr. general, *b.* in Martinique, was descended from an ant. noble family in Orléannois. In 1779 he married Joséphine Tascher de la Pagerie, afterwards the first wife of Napoleon, by whom he had Eugène de B. (*q.v.*), and Hortense, wife of Louis Bonaparte, king of Holland, and mother of Napoleon III. B. served in the Amer. war of Independence, came to France and joined the revolutionary party. He was secretary to the assembly, and commanded the army of the Rhine, 1793; his failure to relieve the siege of Mainz, and the suspicion attached to his noble birth, brought on him the enmity of the Committee of Public Safety, and he was tried and guillotined.

Beauharnais, Eugène de (1781-1824), son of Viscount Alexandre B.; at his father's death his mother, Joséphine,

married Napoleon Bonaparte. Eugène accompanied Bonaparte to Italy and Egypt, and was made a prince of the empire, and appointed viceroy of the (so-called) kingdom of Italy; he married, in 1806, the daughter of the king of Bavaria. After suffering defeats from the Russians and Austrians, he retired with his family to Bavaria.

Beauharnois, co. of S.W. Quebec. The St. Lawrence forms its N. boundary. Its area is 250 sq. m., and it is drained by the R. Chateauguay. Its chief tn. is of the same name, and its pop. 20,000, tn. 3500.

Beauharnois, Charles, Marquis de (d. 1749), Fr. governor-general of Canada (1726-47). His task was to maintain the then Fr. colony of New France, as it was called, against Eng. designs, and to do all in his power to encourage Fr. immigration. Fr. tradition, however, seemed to look upon New France mainly from the strategic standpoint, and but little attention was paid to its political or social development. B. tried to promote the movement of Canadian expansion towards the W. of the country, and to that end he commissioned the valiant Pierre de la Verendrye, an explorer and native of Three Rivers, then commanding officer at Lake Nipigon, to organize an expedition, in 1731. The result of this expedition was the establishment of a number of trading posts between Lake Superior and the Saskatchewan R. The rivalry between the Fr. and Brit. colonists in commerce, however, led to a renewal of war, and B. set to work to strengthen the Fr. position by building new forts among which was Fort Ticonderoga on Lake Champlain. He returned to France in 1746.

Beaujeu, Fr. tn. in the Rhône dept., about 27 m. from Lyons. Pop. 2400.

Beaujolais, dist. forming part of Rhône-et-Loire, specially famous for its production of burgundy.

Beaujoyeux, Balthazard de, see BALTAZARINI.

Beaulieu, a Fr. winter resort in the Alpes-Maritimes, 4 m. from Nice. It possesses a good harbour. Pop. 2000.

Beaulieu (pronounced Bewley), par. of S. Hampshire, England, on the estuary of the R. B., about 5 m. from Southampton and 6 m. from Lymington. It has an abbey, now in ruins, founded by King John, which sheltered Margaret of Anjou after the battle of Barnet. Pop. 1000.

Beaulieu, Walter Edward Douglas Scott Montagu, Baron Montagu of (1866-1929), Brit. motoring pioneer, son of Lord Henry Scott Montagu and grandson of the fifth duke of Buccleuch. Educated at Eton and Oxford, and trained in engineering in railway workshops. In 1915 was adviser on mechanical transport to the Indian gov. Later took up aviation.

Beaulieu (pronounced Bewley), tn., Inverness-shire, Scotland, 10 m. W. of Inverness. Here are the remains of the Cistercian priory of St. John, 1230, and the site of Lovat Castle. Pop. 800.

Beaumarchais, Pierre Augustin Caron de (1732-99), Fr. dramatist, b. at Paris, son of a watchmaker; he was brought up as a

watchmaker, and also showed great skill in music, playing the harp and guitar. His proficiency in watch-making as shown by a watch with a new escapement, which B. had made for Mme de Pompadour, attracted the notice of Louis XV., and he was admitted to court. His fame as a writer rests on his plays, and principally on *Le Barbier de Séville* (1775), and *Le Mariage de Figaro* (1784), on both of which operas have been written. The character of Figaro was a happy invention, and the plays are full of wit and well constructed. He holds a high place as a satirist, and is considered perhaps the best of the Fr. dramatists of the eighteenth century.

Beaumaris, port and mkt. tn., also the cap. of Anglesey, Wales. It is situated on B. Bay, to the N. of Menai Strait. The harbour is safe and roomy. The tn. is frequented by summer visitors, who are attracted by the golf links and the sea-bathing. There are slate quarries in the neighbourhood. The castle was founded by Edward I. in 1295. Pop. 1700.

Beaumes-de-Venise, tn. of Vaucluse, France. It has mineral resources, cultivates the vine and mulberry, and contains an old Rom. church. Pop. 1200.

Beaumont, co. seat of Jefferson co., Texas, U.S.A. Incorporated in 1881, it has a pop. of 59,000. Chief industries are oil, steel, lumber, shipping, and agriculture.

Beaumont, tn. in the prov. of Hainault, Belgium, about 15 m. from Charleroi. There are marble quarries and iron works in the dist. Pop. 2200.

Beaumont, tn. in Puy-de-Dôme, France, situated at a distance of 2 m. from Clermont-Ferrand, the cap. of the dept. Pop. 2300.

Beaumont, Eon de, see EON DE BEAUMONT.

Beaumont, Francis (1584-1616), Eng. poet, third son of Francis B., a judge of the Court of Common Pleas, b. at the family seat of Grace Dieu, in Leicester. He entered, at the age of 10, Broadgate's Hall (now known as Pembroke College), Oxford; but his father d. in 1598, and he left without taking a degree. He became a student at the Temple, 1600, but paid little attention to law. He records in a poetical epistle his intimacy with Ben Jonson and other men of literary pursuits who frequented the Mermaid Tavern; here probably he met John Fletcher, with whom his name is associated. Their friendship was close, and they lived together until B., in 1613, married Ursula, daughter of Henry Isley, of Sundridge in Kent, by whom he had 2 daughters. He was buried in Westminster Abbey. The masterpieces of B. and Fletcher are *Philaster* and *The Maid's Tragedy*. Fletcher is generally regarded as having contributed the vivacity, and B. the judgment, the latter's duty being often to correct the overflows of Fletcher's wit. The purest characters in their plays are not free from an admixture of coarseness, while chastity is overwrought and put to absurd and gratuitous trials, so that some of the freshest and loveliest passages are

found side by side with fantastic affectations. It has been generally said that B.'s only certain individual play is *The Masque of the Inner Temple and Grayes Inn*, but more recent criticism (e.g. E. H. Oliphant's *The Plays of Beaumont and Fletcher*, 1927) restores to B. much which other circles denied him. Other work assigned to B.'s sole authorship is the *Induction*, with *The Triumph of Honour* and *The Triumph of Love in Four Plays* (or *Morall Representations*) in one, printed 1647. Among other plays, B.



FRANCIS BEAUMONT

and Fletcher produced *Four Plays* in one, 1608; *A King and No King*, 1611; *Cypids Revenge*, 1611 (?); *The Knight of the Burning Pestle*, 1611; *The Maidens Tragedy*, 1611; *Phylaster*, 1611; *The Coxcomb*, 1612-13; *What at Several Weapons*, 1614; *The Scornful Ladie*, 1616; possibly *The Tragedy of Thierrey King of France*, and his brother Theodore, 1616; and *The Little French Lawyer*, 1620. B. may have co-operated with Massinger in *The Lovers of Candy*. See also FLETCHER, JOHN.

Eds. of B. and Fletcher: A. Dyce, 11 vols., 1843-46; A. H. Bullen, 4 vols. (incomplete), 1904-12; A. Glover and A. R. Waller, 10 vols., 1905-12; G. P. Baker, *Select Plays*, Everyman's Library, 1911. See also G. C. Macaulay, *Francis Beaumont, a Critical Study*, 1883; C. M. Gayley, *Beaumont the Dramatist*, 1914; U. M. Ellis-Fermor, *The Jacobean Drama*, 1936.

Beaumont-Hamel, vil. of France in the dept. of the Somme. The vil. and its immediate neighbourhood were the scene of heavy fighting in the battles of the Somme and Ancre in 1916. The position was a difficult one to attack, by reason of the quarries and excavations in which large bodies of Gers. could remain concealed and practically immune from artillery fire. In the Somme battle, on July 1, the 8th Army Corps, under General Sir Hunter Weston, comprising

the 4th, 31st, and 29th Divs., together with the Newfoundlanders, a force of 50,000 men in all, were detailed to make the assault on this part of the line. In the 31st and 4th Divs. were the 1st E. Lancs, 1st Rifle Brigade, 8th Warwick, 1st Hants, 1st Somerset and 6th Warwick regiments, whose immediate objective was the capture of the Serre-Grandcourt Ridge so as to provide a defensive flank for operations lower down the line. The Somersets advanced farthest, but ended with both their flanks exposed, while, at the same time, the attack N. of B.-H. was entirely held up. The advance on the right was made by the 2nd Dublins, 2nd Seaforth's, 2nd Essex, and 1st Lancasters, whose repeated efforts, however, enabled them to make no headway beyond their own front trenches and only a few men got over the Ger. line. Only 2 of the battalions of the 4th and 31st Divs. remained intact. The 29th Div., which had made hist. in the Gallipoli campaign of the previous year, attacked on the right of the 4th Div., with the 86th and 87th Brigades in the first line, the spear-head of the attack falling on the 2nd Royal Fusiliers and the 1st Lancs Fusiliers. The leading Brit. infantry were quickly up to the Ger. front line, but there they found their further advance thwarted by dug-outs filled with Ger. soldiers. Thus the attack by the whole corps had failed, with severe losses all round, and the sole course was to abandon the attack by nightfall and to hold a defensive line. At the battle of the Ancre in the following Nov., however, the Brit. forces gained a considerable victory by capturing the vil. The credit for this reversal of the fortunes of war fell to the 51st Highland (Territorial) Div. and the Royal Naval Div. (Infantry), who took the vil. by storm with all its network of caverns, a great quantity of machine guns and some 1500 members of the garrison.

Beaumont, Sir George Howland, Eng. baronet, seventh of the auct. family of the Bts. of Stoughton Grange, Leicestershire, was b. in 1753, and educated at Eton. He was a distinguished amateur of the arts and friend of artists, possessed himself considerable skill as a landscape painter, and was one of the most munificent donors to the Brit. national collection of pictures. He d. in February, 1827, without issue.

Beaumont, Jean Baptiste Élie de (1798-1874), Fr. geologist, b. at Canon. He went to England with a view to preparing a geological map of France after the publication of Greenough's map, 1820. The result was later seen in the map pub. by him and Dufrenoy, 1840, his greatest service to geology. He was engineer in chief, 1833, and inspector-general of mines, 1847. He was perpetual secretary of the Academy of Sciences, 1853, in succession to Arago. His theory of the origin of mt. ranges, *Notice sur le système des montagnes*, 1853, is not now accepted, but it was of great value from the detailed researches he made in its preparation.

Beaumont, Sir John (1583?-1627), Eng.

poet. He was *b.* in Leicestershire, an elder brother of Francis B., and educated at Oxford, which he entered in 1596. He was knighted in 1603. His patron was the duke of Buckingham. In religion he was a Puritan. His best-known poem is *Bosworth Field*, first pub. 1629. Among his friends, not the least intimate was Michael Drayton. He was buried at Westminster Abbey. See his *Works*, ed. A. B. Grosart, 1869.

Beaumont, Joseph (1616-99), Eng. poet. He was *b.* at Hadleigh, Suffolk, and was educated at the local grammar school. He subsequently entered Cambridge. His poems include an epic *Psyche, or Love's Mystery*, 1648.

Beaumont-sur-Oise, tn. in the dept. of Seine-et-Oise, France, on the Oise, about 18 m. from Paris. It has a trade in grain, cattle, and cheese. Pop. 5000.

Beaumont-sur-Sarthe, tn. in the dept. of Sarthe, France, on the riv. of the same name, and about 15 m. S. of Alençon. Pop. 1700.

Beaune, tn. in the dept. Côte-d'Or, France. Its manufs. are white metal, oil, vinegar, and casks. It is the centre of the burgundy wine trade. Its buildings include the churches Notre Dame and Saint Pierre, both of the twelfth century. In the eighteenth century there were seven monastic buildings in the tn. besides a Benedictine abbey and a Carthusian convent. B. appears as a fortified place as early as the seventh century and for some time was the cap. of a separate duchy. United to Burgundy in 1227, it became the first seat of the Burgundian Parliament and was the residence of sev. of the dukes. Pop. 12,000.

Beaune, Florimond de (1601-52), Fr. geometer and friend of Descartes, *b.* at Blois. He commented on Descartes's geometry, is noted for his problem on curves, and invented sev. astronomical instruments.

Beaune-la-Rolande, tn. in the dept. of Loiret, France. It is of great antiquity, was devastated by the Eng. in the Middle Ages, and its church was rebuilt by Charles VII. Here the Fr. under d'Aurelles de Paladine, were defeated by the Gers., Nov. 28, 1870. Pop. 1700.

Beaupréau, tn. in the dept. Maine-et-Loire, France, situated on the Èvre, about 28 m. from Nantes. Pop. 3500.

Beauregard, Pierre Gustave Toutant (1818-93), Amer. general, *b.* at New Orleans. Appointed general, Aug. 1861, he commanded the Confederate Army at Shiloh, 1862, after A. S. Johnston's death in the battle and withdrew to Corinth, which position he defended against Halleck for a month. From Sept. 1862 till May 1864 he defended Charleston and then defeated Butler at Drury's Bluff. He surrendered with Johnston after the campaign against Sherman in 1865. See A. Roman, *Military Operations of General Beauregard*, 1883.

Beauregard-l'Évêque, com. in Puy-de-Dôme, France, noted for an anct. building erected by the bishops of Clermont as a house of recreation. Pop. 800.

Beaurepaire, vil. in the dept. Isère, France, on the Suzon and Auron Rs., 18 m. from Vienne. Silk-throwing is carried on, and there are tanyards and cutlery works. Pop. 3000.

Beau Séant, or **Bauceant**, banner belonging to the knights templars in the thirteenth century. It was an oblong flag with the design in white and black.

Beausobre, Isaac (1659-1738), Fr. Protestant divine, studied at Saumur. After the revocation of the Edict of Nantes he fled to Holland and thence to Germany, where he was a favourite with Frederick William I.; he lived at Berlin 46 years. He wrote critical and historical work on the N.T.

Beausset, vil. in the dept. of Var, France, 11 m. from Toulon. Earthenware is manufactured and there is a trade in oil, wine, and corn. Pop. 1800.

Beauty, that quality in visible objects in consequence of which their colours and forms are agreeable to the human mind. Though at first applied to objects perceptible by the sight, an easy transition extended the meaning of the word to include the other senses. By a further extension, beautiful has become merely a term of praise synonymous with admirable, e.g. beautiful language. See *ÆSTHETICS*.

Beauvais, tn, cap. of the dept. Oise, France. It is situated at the junction of the Avelon and Thérain, in a beautiful valley. It is an anct. place, having been known to the Rom., who called it *Cæsaromagus*. Its cathedral, begun in 1247, is famous, and the stained-glass windows from the 13th to the 16th century are specially noted. B. is famous for its heroic defence against Charles the Bold in 1472, when the garrison being reduced to 300 men, the women took up arms under Jeanne, called *Hachette* from the weapon with which she armed herself. The siege is still commemorated every year by a procession in which the women precede the men. It was at B. that the Brit. airship *R. 101* came down in flames in Oct. 1930. The centre of the tn. was severely damaged and partly destroyed by bombing during the Second World War. The manufs. are tapestry, carpets, gold and silver lace, brushes, etc. Pop. 19,000.

Beauvoisis, or **Beauvaisis**, dist. of France, formerly comprised in the gov. of Picardy, then of the Ile-de-France; now part of the arron. of Beauvais in the dept. of Oise.

Beaux-Arts Institute of Design, Amer. school of fine arts situated in New York, and modelled after the analogous society in Paris. It was founded in 1916 by the Society of Beaux-Arts Architects to teach the fine arts, at the lowest practicable cost, to students with the view of carrying the student beyond the academic stage to that of practical application; and, further, to bring about co-operation among the different art schools of the U.S.A.

Beaver (*Castor*), name applied to a genus of rodents of the family Castoridae. There are only 2 species, *C. fiber* and *C. canadensis*; the former is a native of

Europe, and the latter of N. America. They are related to squirrels and prairie dogs, and are noted for their intelligence, their skill in building houses and dams, their glossy fur, and glands which secrete castoreum, used in medicine. In length they are about 1 to 2 ft., while the broad, flat tail is about another foot long; their feet are webbed. Their food consists of the bark of trees and occasionally they eat fruit. They live in large communities in burrows or lodges near the banks of a stream, for in habit they are aquatic. To obtain wood, both for building and for food, they gnaw round the bases of trees until they fall, when they float them down



BEAVER

stream to their houses. When the wood near home is exhausted they construct canals and dams so that they may bring into their power the wood beyond their reach at the time, and in this way whole tracts of land are deprived of timber and covered with water. The European *B.* seldom construct dams, but *C. canadensis* by its construction does much damage. Their houses, or lodges, are built on the banks of streams or on small is., and are made of twigs, moss, and grass plastered together with mud, and the entrance passage is often protected by piles of sticks. The *B.* is hunted on account of its fur, the fatty castoreum, and its flesh—especially that of the tail—and is in danger of total extermination. See E. R. Warren, *The Beaver*, with full bibliography (London and Baltimore), 1927.

Beaver, Sir Philip (1766-1813), Eng. naval captain. At the age of 11 he accompanied Captain Joshua Rowley in the *Monarch*. He joined a scheme of colonisation in Bulama Is., near Sierra Leone, but the venture proved disastrous.

Beaverbrook, Sir William Maxwell Aitken, first Baron, of Beaverbrook, New Brunswick, Canada, and of Cherkley, Surrey, was b. May 25, 1879, third son of the Rev. Wm. Cuthbert Aitken, minister

of Newcastle, New Brunswick; who was son of Robert Aitken, of Torpichen, W. Lothian. W. M. Aitken was at an early age in business at Halifax, Nova Scotia. In 1907 he became a stockbroker in Montreal where in 1910 he began what ended in the amalgamation of all the Canadian cement-mills—making £1,000,000 on the deal. Then he came to England; and, as Conservative parl. candidate, won Ashton-under-Lyme, 1910. He became private secretary to A. Bonar Law (q.v.) and was knighted June 20, 1911. Early in the First World War Aitken was at the Front—in the capacity of the Canadian Gov.'s 'Eye-Witness'; and he was made a baronet 1916, and a peer in 1917 after Lloyd George had become Premier. He was chancellor of the Duchy of Lancaster and minister of information, 1918-19. Afterwards he turned his attention to the management of newspapers. Having already a considerable share in the London *Daily Express*, he now took sole charge of that organ; he then estab. the *Sunday Express*, and bought the *Evening Standard* from the Hulton group. On the defeat of the Conservative party at the polls, May 1929, he launched his 'Empire Free Trade' policy. During the Second World War he was appointed minister for aircraft production in the Churchill Gov. in May 1940. He at once put in hand a programme for a greatly increased output of essential types of machine, particularly Spitfires, Hurricanes, and Whitley bombers. In Aug. 1940 he was made a member of the War Cabinet; minister of state, 1941; minister of supply, 1941-42. Publications: *Canada in France* (2 vols.), 1916-17; *Success*, 1921; *Politicians and the Press*, 1925; *Politicians and the War* (2 vols.), 1928-32; *The Resources of the British Empire*, 1934. See lives by F. A. Mackenzie, 1931, and W. J. Brittain, 1941.

Beaver Dam, tn., Dodge co., Wisconsin, U.S.A. It is situated on B. Lake, 65 m. W. of Milwaukee. Its manufs. are wool, cotton, metal goods. Wayland Academy is a Baptist college in the tn. Pop. 10,000.

Beaver Falls, tn., B. co., Pennsylvania, U.S.A.; it lies 32 m. N.W. of Pittsburgh on a plateau above the B. R. It has a large manuf. of iron and steel goods of all descriptions. The Presbyterian Geneva College is now at College Hill close by. Pop. 17,000.

Beaver Rat, name given in Australia to the native water-rat of the genus *Hydromys*, family Muridae, and order Rodentia. These small mammals are related to voles, hamsters, and lemmings.

Beaver-tree, sweet bay, or swamp laurel, the *Magnolia glauca*, growing in swampy ground from Massachusetts to Florida. It has evergreen leaves and round fragrant white flowers.

Beawar, tn. in the dist. of Ajmeer-Merwara, Rajputana, India, situated 30 m. from Ajmeer and is a centre of the raw cotton trade. Pop. 22,000.

Beazley, Sir Charles Raymond, Eng. geographer and historiographer, b. at Blackheath, Apr. 3, 1808; educated King's College, London, and Balliol College, Oxford; fellow of Merton College

1889-90, and research fellow 1897-1910. He was Lowell lecturer at Boston, 1908, member of the Brit. Univs. delegation to France, 1910, 1921, and member of advisory committees of the Brit. Labour party for international affairs and education. He was prof. of modern hist. at Birmingham Univ., 1909-33, and between 1930 and 1937 he made 5 lecture tours in Germany. He was knighted in 1931. His pub. works include: *James of Aragon*, 1890; *Dawn of Modern Geography* (3 vols.), 1897, 1901, 1906; *Voyages and Travels of the Sixteenth and Seventeenth Centuries* (2 vols.), 1902; *John and Sebastian Cabot*, 1898; *Voyages of Elizabethan Seamen*, 1907; *Notebook of Medical History*, 1917; *Nineteenth Century Europe*, 1922; *The Road to Ruin in Europe*, 1932.

Bebeerine, or **Bibirine**, extract of the bark of the greenheart, *Nectandra rodigii* or *leucantha*, of Gulana, the native name for which is *bibiru*. Its efficacy as a tonic and febrifuge was discovered in 1835 by a doctor in Demerara, Hugh Iodice, and its properties chemically analysed by Sir D. MacLagan, 1841.

Bebek, bay and small tn., on the W. shore of the Bosphorus, some 6 m. from Istanbul. An eighteenth-century palace of the sultans overlooks the beautiful bay.

Bebel, Ferdinand August (1840-1913), Ger. Socialist and leader of the Social-Democratic party, b. at Cologne. He worked as a turner at Leipzig, joined the Working Men's Association, 1863, and became a Socialist, 1865. In 1867 he was elected to the N. Ger. Reichstag and to the united Ger. Reichstag in 1871, of which he remained a member until his death. He with Liebknecht opposed the war in 1870, and in 1871, as the only Socialist member, the annexation of Alsace. In 1872 he was imprisoned for high treason. With Liebknecht he organised the Social-Democratic party and joined the staff of *L'œuvre*, 1890. His oratorical powers gave him a commanding position in his party, which survived the attacks of the more violent 'young' Socialists on one hand and the 'Revisionists' on the other. He became leader of the parl. Socialists and was a confirmed adherent to Marxian principles. His chief publications are *Der deutsche Bauernkrieg*, 1876; *Unsere Ziele*, 1886; *Charles Fourier*, 1890; and his attack on bourgeois marriage, *Die Frau und der Sozialismus*, 1883, and an autobiography, *Aus meinem Leben*, 1910-14.

Bebington, urban dist. of Cheshire, on the Mersey, near Birkenhead, of which it is virtually a suburb. It is a residential dist. for Liverpool. Pop. 35,000.

Bèbre, riv. of France, which rises in the dept. of Loire, and drains the S.E. of the dept. of Allier. After a course of 47 m. it enters the R. Loire.

Beo, Abbey of, Benedictine abbey, of which only the ruins remain, near Bernay, Normandy. It was founded by Herlwin or Herlewin in 1034. Under Lanfranc as prior and Anselm, prior and abbot, it became the centre of learning in Europe.

Beccafumi, Domenico (1484-1549), It. painter, b. in Siena. Son of a peasant,

Giacomo di Pace, who was employed on the estate of Domenico's subsequent patron, Lorenzo Beccafumi. Domenico was at one time known as Il Mecherino, from the name of an artist with whom he worked; but, later, he was known by the name of his patron. He painted in distemper and in oil; better in the former style, and his small figures are superior to his larger ones. He is remembered chiefly for the work he did for the famous pavement of the Duomo of Siena. His best works are in Siena.

Beccaria, Cesare Bonesana, Marquis of (1735-93), It. writer on moral and political philosophy; a student and in a manner imitator of Montesquieu; pub. a work on the monetary abuses in Milan. He ed. a paper, *Il Caffè*, after the manner of the *Spectator*. His best-known work was *Crimes and Punishments*, a work singularly in advance of his time. In 1768 the Austrian gov. founded a chair of political philosophy for him at Milan. See CAPITAL PUNISHMENT.

Beccaria, Giovanni Battista (1716-81), It. physicist, b. at Mondovì; studied theology at Rome, and was prof. of philosophy at Palermo. In 1748 the king of Sardinia appointed him to the chair of natural philosophy at Turin. He pub. various works on electricity; elected a fellow of the Royal Society, London, 1755.

Beccles, a municipal borough and mkt. tn. in Suffolk, England. It is situated on the r. b. of the Waveney, which riv. is navigable to Yarmouth. The tn. is 110 m. from London. Printing is an industry, and there are ironworks. Pop. 7100.

Beccerra, Gaspar (1520-70), Sp. painter and sculptor. He was a native of Baeca in Andalusia. He studied, it is said, under Michelangelo in Rome. Philip II. had many of the rooms of his Madrid palace painted by him.

Bee-fn, Fr. name for various warblers of the family Turdidae. It includes such thin-billed birds as the stone-chat and hedge-sparrow.

Bèche, Sir Henry Thomas de la (1796-1855), Eng. geologist, b. in London. He attained a reputation by his geological map of England, in which he was assisted by the Gov. He became president of the Geological Society in 1847.

Bèche de Mer, often known by the Malay name *trepang*, or as sea slug or sea cucumber, species of holothurian echinoderms, about 5-12 in. long, with either smooth or warty skins. They are found chiefly off the coasts of the E. Archipelago and New Guinea and Queensland. First boiled and then dried in the sun and smoked, they are used in gelatinous soups in Chinese cookery, and are considered a great delicacy.

Becher, Johann Joachim (1635-82), Ger. chemist and physician, b. at Spire, became prof. of medicine at Mainz; his *Physica Subterranea*, 1669, contain his experiments on various substances; Stahl's *Doctrine of Phlogiston* is indebted to him (ed. 1703). He d. in London.

Bechstein, Johann Matthäus (1757-1822), Ger. naturalist, b. at Waltershausen

in Saxe-Coburg-Gotha; educated at Jena Univ. He devoted himself to the study of silviculture and was chosen director of the Academy of Forestry at Dreissigacker by the duke of Saxe-Meiningen in 1800. His *Naturgeschichte der Stubenvogel* (1840) has been trans. into Eng.

Bechstein, Karl (1826-1900), Ger. pianoforte-maker, b. at Gotha, Germany. He was the founder of the Berlin firm which still bears his name, and whose instruments are famous for depth of tone.

Bechuanaland, country of Africa, occupying part of the central plateau of S. Africa, bounded by the Orange R. on

estab.; the Bamangwato (102,000), the Chief Khama's people, occupying the main portion of the N.E. of the protectorate, chief tn. Serowe, removed from Palapye, 1903; the Bangwaketsi (24,000); the Batawana (42,000); and the Bakgatla (14,000). In 1909 the Bamalete Reserve (6000) was also fixed. A portion of Matabeleland, the Tati concession, is attached to the protectorate. In 1922 part of S.W. Africa, Caprivi-zipl, was also incorporated, but was transferred back to S.W. Africa in 1929. The W. portion of the protectorate is occupied principally by the Kalahari Desert, where



THE NATIVE HOSPITAL AT SEROWE, BECHUANALAND PROTECTORATE

E.N.A.

the S., the Zambesi R. and Rhodesia on the N., the Transvaal on the E., and S.W. Africa on the W. Politically it is divided into Brit. B., incorporated, 1895, with Cape Colony, area 51,424 sq. m.; pop. over 90,000 of which about 20 per cent are white; and the B. Protectorate, area estimated at 275,000 sq. m.; pop. (census 1946) 252,000, of which 2300 are white. The pop. of Ngamiland (1936 census) is 42,000. The protectorate is governed as a Brit. crown colony by the high commissioner represented by a resident commissioner. The chief European centres in the protectorate are Lobatse, Gaborone, Francistown, and Serowe.

Mafeking, in Brit. B., is the headquarters of the protectorate administration. Until 1915 the excess of expenditure over revenue, derived principally from a hut-tax of £1 per annum, was covered by an imperial grant, but from that year revenue has exceeded expenditure (up to 1944). In 1899 the boundaries of 4 native reserves were

big game abounds; the E. is veldt-land, affording pasture for cattle, the chief wealth of the native peoples. The country is more pastoral than agric., crops depending entirely on the rainfall. Kafir corn, mealies (the chief native food crop), beans, melons, and pumpkins are sown, and, ordinarily, suffice for the people's needs. The winter climate (May to Aug.) is good except in the marshy dists. round Lake Ngami in the Okavango basin, N.W., and in the Makarikari salt marshes, N.E.; the rainfall ranges from 10 in W. to 26 in E.; the soil is fertile but needs irrigation.

Minerals. Gold and silver are found in the Tati concession, where there is mining on a small scale. Gold and silver to the total value of £112,000 were mined in 1941.

Trade. Imports: blankets, ploughs, ironware, and groceries. Exports: cattle, hides, skins, dairy produce, and wood. Rhodesia is the best customer for sheep and goats from B. and the Union for pigs.

Cattle number over 900,000 head, mostly owned by natives. European settlers trade in dairy produce.

Education. There exist at present 10 European, 4 coloured, and 145 native schools. The European schools are financed by the Gov., the native schools mainly by the native treasuries. Under the director of education, the schools are controlled, in most of the reserves, by school committees, on which the missionary bodies, together with Africans, are represented. The Bamangwato have for many years past entirely met the cost of the Khama Memorial School.

Development and Welfare. As in other African dependencies, schemes are under way in B. for effecting improvements in agriculture, medical services, education, and communications, also for combating soil erosion, improving water supplies, irrigation dams, and tribal granaries.

Communications. The railway from Kimberley to Vryburg and Mafeking traverses the B. Protectorate *en route* to Rhodesia. A telegraph line from Cape Province runs from Mafeking through Gaberones and Francistown to Bulawayo and Salisbury in Rhodesia.

History. Exploration began at the end of eighteenth century; in 1818 the London Missionary Society settled at Kuruman. Robert Moffat's headquarters from 1821. Livingstone's systematic explorations commenced in 1841. After the Sand River convention, 1852, the Boers began to encroach from the E. The appeals from the native chiefs, notably the Christian and enlightened Khama, during the seventies, led to a temporary Brit. occupation. After the first Transvaal war, the Boers set up the republics of Stellaland (at Vryburg) and Goshen in the N., which they retained contrary to the London convention, 1884. Sir Charles Warren's expedition, 1884, finally brought B. under Brit. rule. The present administrative div. dates from 1895. In that year arrangements had been made to transfer the protectorate, with the exception of the native reserves, to the Brit. S. Africa Company, but as a result of the Jameson raid the Imperial Gov. again took over the administration. The same year portions of native ter. were made over to the Brit. S. Africa Company, Ltd., and are known as the Tuli, Gaberones, and Lobatsi farms. In 1896 the B. Railway Company constructed the railway which connects the Union of S. Africa with Rhodesia. In 1910 the protectorate, excluding the Tati dist., was vested by Order in Council in H.M. High Commissioner for S. Africa, and in 1911 the Tati Concessions, Ltd., were confirmed in their possession of the Tati dist. By an agreement concluded in 1932 with Tshokedi Khani, acting chief of the Bamangwato tribe, the Brit. S. Africa Company obtained the sole right, for 20 years, to prospect for precious stones, minerals, and metals throughout the Bamangwato country. In 1920 an advisory council, both native and European, was estab. for the benefit of the resident commissioner. The Gov. of the Union of S. Africa have

from time to time made efforts to induce the Brit. Gov. to transfer the B. Protectorate, and also the other two high commission territories to the Union, and indeed the S. Africa Act makes provision for the possibility of such incorporation. But hitherto the people of these territories have manifested no wish to change their political status, particularly in view of the fundamental difference between Brit. and S. African native policy. See G. B. Clark, *Transvaal and Bechuanaland*, 1883; J. T. Brown, *Among the Bantu Nomads*, 1926; J. Mockford, *Khama: King of the Bamangwato*, 1931.

Beck, Sir Adam (1857-1925), Canadian engineer, b. at Baden, Ontario, of Ger. parents. Educated at Galt, Ontario, and then joined his father's business at London, Ontario. He was the creator of the hydro-electric system of the power supply which led to the development of Canadian secondary industries. He was a member of the Ontario Legislative Assembly and chairman of the Hydro-Electric Power Commission.

Beck Case, a legal case of mistaken identity. In Apr. 1904 a man named Adolf Beck was identified by sev. women and an ex-policeman as a certain man named Smith, who had previously been imprisoned for fraud. He was tried and convicted of attempting to defraud these women again. While undergoing penal servitude he discovered that Smith was a Jew, and by personal marks he was at length able to prove his innocence. He was pardoned and offered a sum of money as compensation for his imprisonment. Smith was arrested, and Beck d. in poverty in 1909. This case was largely instrumental in bringing about the estab. in England of the court of criminal appeal. See J. Kempster, *Perversion of Justice as exhibited in the Beck Case*, 1905.

Beck, Josef (1894-1944), Polish soldier and politician, b. Oct. 4 in Warsaw. He served with Pilsudski's Polish Legion in 1914, and also in the Polish war with U.S.S.R., 1919-20. When Pilsudski came to power in Poland, B. became foreign minister in 1932. He was instrumental in concluding a pact of non-aggression with Hitler's Third Reich on Jan. 26, 1934, but later when Hitler threatened Danzig, he signed a military alliance with Great Britain on Aug. 25, 1939. After the fall of Poland, B. fled to Rumania, where he was interned. He continued to exert some influence on the exiled Polish gov. in London, mainly in hostility to Russia, and also made unsuccessful overtures to Hitler. He d. at Bucharest.

Becke, George Louis (1848-1913), Australian novelist, b. at Port Macquarie, New S. Wales. His chief works are: *By Reef and Palm*, 1894; *The Ebbing of the Tide*, 1896; *His Native Wife*, 1896; *Wild Life in Southern Seas*, 1897; *Rodman the Boat-steerer*, 1899; *Tom Wallis*, 1900; *Ilelen Adair*, 1903; *Notes from my South Sea Log*, 1905. He also wrote various works in collaboration with Walter Jefferey.

Beckenham, urb. dist. of Kent, England, 9 m. S.E. of London. It is chiefly a

residential area. At Monk's Orchard is the Bethlehem hospital, opened in 1930. Pop. (1931) 44,000.

Becker, Ferdinand Wilhelm (1805-34), Ger. physician, b. at Hoxter on the Weser, where his father, Karl Ferdinand B., a distinguished philologist, practised as a physician. Educated at Göttingen, and in 1820 came to Scotland, where he was appointed assistant librarian in the Advocates' Library (*q.v.*). He was appointed by the Russian Gov. to make inquiries concerning the efficacy of vaccination; he d. suddenly. His works include sev. Lat. treatises on medical subjects, and a pamphlet on *Cholera*, pub. in London.

Becker, George Ferdinand (1847-1919), Amer. geologist, b. at New York Jan. 5; graduated at Harvard and Heidelberg. United States geologist, 1879-92; afterwards on staff of U.S. Geological Survey. Reported on goldfields in S. Africa and Alaska, and on the geology of the Philippine Is.

Becker, Karl Ferdinand (1775-1849), Ger. philologist, b. near Trier, estab. a school at Offenbach, 1823. His prin. work, *Ausführliche deutsche Grammatik*, 1836, was long popular.

Becker, Wilhelm Adolf (1796-1846), Ger. archaeologist, b. at Dresden; studied under Beck and Hermann at Leipzig Univ., and became prof. of archaeology there in 1842. His greatest work is the *Handbuch der römischen Alterthümer*, 1843, finished (1868) by Marquardt and Mommsen, but his most popular books are the scenes of Rom. and Gk. life in the form of romances, *Gallus*, 1838 (new ed. 1880), and *Charicles*, 1840 (new ed. 1877); both have been trans. into Eng. See d. at Meissen.

Beckerath, Hermann von (1801-70), Prussian statesman, b. at Krefeld; gained great wealth from the bank which he founded, 1838; was a member of the Frankfurt Parliament, 1848, and made finance minister.

Becket, Thomas (1119-70), chancellor of England and archbishop of Canterbury. He was b. of Norman parents, his father, Gilbert B., being a well-to-do London merchant. He received his education at Merton Priory and in London, being also given a long course in knightly exercises and later being sent to Paris to study theology. He was attached to the court of Theobald, archbishop of Canterbury, during the years 1148-53. In 1152 the pope ordered Theobald to refuse the crown of England to Eustace, the son of King Stephen, this step having been taken at the instigation, it is said, of Thomas B. On the accession of Henry II. B.'s further promotion was expected. By the archbishop he had already been promoted and offices had been heaped upon him, and a year after the accession of Henry II (1155) he was appointed to the chancellorship. His appointment was popular and was regarded as the beginning of a new era, since he was the first Englishman to receive an appointment of this description since the Conquest. During his period of office he was far more regal in his

manner of living than was the king himself. He was the head of an embassy to the Fr. court, he suggested a means of gaining the Norman Vexin, and he took an active part in the Toulouse campaign. In 1162, when he was created archbishop of Canterbury, he changed his manner of living to that of an ascetic; he determined to support and claim full privilege for the Church; and he became the zealous champion of the Church against the king. Henry II. was anxious to break the power of the Church, and especially to reduce the benefit of the clergy. By the Constitutions of Clarendon he attempted to do this, and although B. at first refused, ultimately he gave a grudging consent. But B. and the king had shown too openly their antagonism, and from this time onwards they became open enemies. B. fled the country, his property was seized, and the revenues of his sees were impounded. A claim was made on him for moneys due from him when chancellor of the kingdom, he remained in France for 2 years, and then went to Rome, where he was reinstated by the pope in his archbishopric. In 1170 a reconciliation was patched up between himself and the king, and he returned to England. He received a magnificent reception from the people, but quarrels soon broke out again. The coronation of the young King Henry during B.'s absence led him to excommunicate the bishops who had taken part in it. The news of this aroused the Angevin fury of Henry II., and he burst forth with the words that led to the murder of B. in Canterbury Cathedral by 4 of the king's knights. The murder took place on Dec. 29, 1170. B. was canonised in 1172. See W. H. Hutton, *Thomas Becket, Archbishop of Canterbury* (Makers of National History series), 1910; S. Cunningham, *The Story of Thomas Becket*, 1914; also biographies by J. C. Robertson, 1857, and W. H. Hutton, 1926.

Beckford, William (1759-1844), Eng. author, the son of William Beckford (1709-70), lord mayor of London and supporter of Wilkes, was b. at Fonthill Abbey, Wilts. He inherited a fortune on his father's death. In 1783 he married Lady Margaret Gordon, daughter of the fourth earl of Aboyne. After his wife's death in 1786 he went to Portugal. He was M.P. for Wells 1784-90, when he resigned, and for Hindon 1806. In 1801 he sold the contents of Fonthill, and began the building of a new house at a cost of nearly £300,000. His eccentric habits of seclusion here gave rise to various stories. In 1822 he sold Fonthill to John Farquhar, who sold his collection of pictures and art treasures; 3 years later the tower (260 ft. high) collapsed and destroyed part of the house. B. built another tower near Bath, where he lived till his death. The oriental romance for which he is chiefly remembered, *The History of the Caliph Vathek*, was originally written in Fr. and (according to the *Quarterly Review*, June 1834) was pub. before B. had closed his twentieth year. Justin Hannaford (introduction to reprint of 1905) states that it was composed

in 1785 or 1786, and (as B. was wont to assert) at a single sitting of 3 days and 2 nights. Yet other accounts say that it was written in Fr., 1781 or 1782, and first pub. in Fr. in 1787. His *Letters from Portugal* were pub. in 1834, and in the same year a reissue of his satirical *Biographical Memoirs of Extraordinary Painters*, originally written in 1780. See C. Rodding's *Memoirs*, 1859; R. Garnett's ed. of *Vathek*, 1893; and L. Melville, *Life and Letters*, 1910. See also *The Travel Diaries of William Beckford*, ed. by G. Chapman, 1928.

Beckmann, Johann (1739-1811), Ger. writer, b. at Hoya in Hanover. Educated at Göttingen Univ. where, in 1766, he was made prof. of natural science. His prin. work was the *History of Inventions*. He wrote also *A History of the Earliest Voyages made in Modern Times* which he left incomplete. His eds. of the *Wonderful Histories* of Antigonus Carystius and of Marbodius's *Treatise on Stones* show a rare union of scientific knowledge with philological learning.

Beckton, dist. of Essex, England, near the l. b. of the Thames, 9 m. from London, by rail. There are enormous gasworks and the N. outfall of the metropolitan drainage system is here.

Beckum, tn. of Westphalia, Germany, 23 m. S.E. of Münster. Pop. 11,000.

Beckwith, John Charles (1789-1862), Brit. general and missionary, b. in Nova Scotia, was a nephew of General Sir Thomas B. (q.v.). He served in the Light Div. during the Peninsular war, and lost a leg at Waterloo. In 1827 the condition of the Waldensians in Piedmont turned him to missionary work. He settled at La Torre, founded 120 schools and built a church.

Beckwith, Sir Thomas Sydney (1772-1831), Eng. soldier, son of Major-General John B., who led a regiment of foot at Minden. He won a great reputation as a leader of light troops, and was practically the creator of one of the finest units, the 95th, in Moore's celebrated Light Div. It was in India under Baird that B., as a subaltern, learned military organisation, and when, on his return to England, a rifle corps or regiment of light troops was about to be formed, B. obtained a captaincy in the new unit which, later, was known as Manningham's Rifles or the 95th of the Line. B. became the lieutenant-colonel of this regiment in 1803, and the part that he and his brigade took in closing Moore's retreat from Portugal is graphically described by Napier. Subsequently he again distinguished himself in the Peninsular war, notably at Busaco and at Sabugal. In 1829 he was appointed commander-in-chief at Bombay, India, Jan. 15.

Beckx, Pierre Jean (1795-1887), general of the Jesuits, b. at Sichen, in Brabant, and d. at Rome. He became confessor to the duke of Anhalt-Köthen, and procurator for the prov. of Austria in 1847. Six years later he was made general of his order, and as such influenced Pope Pius IX. He took a prominent part in the discussions concerning the Immaculate Conception and papal infallibility.

Beoman, John Christopher (1641-1717), Ger. historian and geographer, was b. in Anhalt. He d. at Frankfurt.

Becon, Thomas (1512-67), Eng. divine, chaplain to Archbishop Crammer. He graduated as B.A. at the age of 16 at St. John's College, Cambridge. His religious opinions caused his summons to London, there to recant them and further to burn the books wherein they had been proclaimed. During the reign of Edward VI. he prospered, but was sent to the Tower on the death of the king. His release followed on Elizabeth's accession.

Becontree, dist. of Essex, part of the urban dist. of Dagenham, 11 m. from London. Here the L.C.C. has built houses to accommodate nearly 100,000 persons.

Beccue, Henri François (1837-99), Fr. dramatist, b. in Paris. Was for some time a banker. His plays, which met with varying success, include the opera *Sardanapale*, 1867; *Michel Paupe*, 1870; *L'Enlèvement*, 1871; *Les Corbeaux*, 1882; and *La Parisienne*, 1885.

Bequer, Gustavo Adolfo (1836-70), Sp. poet and man of letters, the son of an artist, Joaquín B. In 1856 he went to Madrid, and earned a scanty living on translations and miscellaneous journalistic work. He wrote 3 vols. of poems and prose legends. In the former he was imbued with the romantic spirit that influenced Byron and Heine; his prose legends are weird and morbid. See his *Works*, ed. by Correa, with a biographical introduction (Madrid, 1885).

Bequerel, Antoine César (1788-1878), Fr. physicist, b. at Châtillon-sur-Loing; served in the Fr. army as an engineer in Spain, 1810; he was appointed to the Ecole Polytechnique and served in France in 1814. He then left the army and began to study with Ampère and Biot magnetism, electro-conductivity, and more particularly electro-chemistry. In 1837 he became prof. of physics at the Musée d'Histoire Naturelle. The value of his researches in electrical science was recognised by the Royal Society with the Copley medal, 1837, and he may be regarded as one of the pioneers in the study of electro-chemistry. Of his numerous scientific publications the chief are *Traité d'électricité et du magnétisme*, 1840; *Éléments de l'électro-chimie*, 1843; *Traité complet du magnétisme*, 1845; *Éléments de physique terrestre et de météorologie*, 1847.

Bequerel Rays, invisible rays given off by uranium. The property of radioactivity of uranium was first discovered by Antoine Henri B. (1852-1908), who was a prof. at the Ecole Polytechnique in Paris, and awarded the Nobel prize in 1903. He was the grandson of Antoine César B. (q.v.).

Becse, or Becsej, tn. of Vojvodina, Yugoslavia, on the r. b. of the Theiss; has a large trade in grain. Pop. 22,900.

Bective Abbey, anct. building situated on the R. Boyne, 5 m. from Trim, Ireland. In later times a church was erected on the site of the ruined abbey, and the steeple of the church still remains.

Bed, term generally for the sleeping

place for human beings or animals; specifically a piece of furniture used for sleeping. Primitive man made his bed upon the floor of a cave or hut of skins, of leaves, of ferns, of dried grass or straw. E. nations pile sleeping-mats and rugs on the floor for night, and remove them in the day. The bed of the O.T. and N.T. can be seen to-day in the E. In India the string bed stretched on a low framework of wood, the *charpoy*, marks a transition towards the bedstead. The material of the bedding, straw, wool, or feathers, has not varied much since early times; hair was used in the Middle Ages. Pillows and bolsters were used in anct. Greece and Rome. The curved head-rest of wood or more costly material is found in anct. Egypt, and to-day in Japan, in Africa, and the Pacific. In modern times flock, wool, horsehair are used for the stuffing of bedding; feathers, still used for pillows, have ceased to be a luxury for the bed; the spring mattress has given place to the coiled wire-woven net, fixed in the framework, a development of the crossed plate of iron or webbing descended from the hide thongs of anct. times which supported the bedding. The bedstead proper in anct. Egypt was a low frame-work of wood, on which was stretched a webbing of rushwork or fibre; more lofty beds, with steps, were used for persons of rank. The early Gk. bed had a head-board, and laced thongs of hide bore its pile of skins or other coverings. Oriental influence brought carving and inlay of metal and ivory, which the Romans copied. At Pompeii have been found the carved bronze posts and head-rests of beds which once supported a narrow frame of wood; such were probably placed in an alcove and sheltered by curtains. In the early Middle Ages the bedstead, where used, appears to have been a box-like construction, but there are illustrations in MSS. of beds with carved and decorated head- and foot-boards; others are mere couches or benches placed against the wall with curtains hung from a side cornice. A feature of twelfth- and thirteenth-century beds is their slope from head to foot. In the fourteenth century is found the tester, with canopy and side curtains usually hung from a wall-projection at the head. It must be remembered that bedsteads were luxuries for the well-to-do, and that the common folk slept, as did their ancestors, on rushes, skins, or straw upon the floor. Till the end of the fifteenth and beginning of the sixteenth century most of the decoration seems to have been lavished on the bed-trappings, which a great personage carried with him, to furnish the light frameworks of the permanent bedsteads. With the sixteenth century comes the great 4-post bed, with its opportunity for the craft of the wood carver. Many fine examples of Elizabethan and Jacobean beds of this type still exist. A historic example is the great bed of Ware, once at the 'Saracen's Head,' now at Rye House. With the end of the seventeenth century a return was made to the tester, but the canopy and side curtains rest on the head-

posts of the bed, and the foot-board, carved and curved, remains or is dispensed with. France was before England in the change, and the eighteenth century in France produced ornate and beautiful examples. Chippendale and Sheraton designed fine mahogany bedsteads, and the present day has seen a revival of the taste for wooden bedsteads in preference to the iron and brass bedsteads which had come into use since the middle of the nineteenth century.

Bed, in geology, term used to indicate the layers of certain rocks, usually called strata. See GEOLOGY.

Bedale, see BEDE.

Bedale, mkt. tn. of the W. Riding of Yorkshire, England, 7 m. from Northalton by rail. The B. hunt is named after the tn.

Bedarieux, tn. in the dept. of Hérault, France. There are manufs. of wool and cloth, and also tanneries and distilleries. Pop. 8000.

Bedda, or **Beda**, Nuts, product of *Terminalia bellerica*, species of Combretaceae. These tropical seeds are used in medicines, and also in dyeing and tanning. In common with the seeds of sev. other plants they are called myrobalans.

Beddard, **Frank Evers** (1858-1925), Eng. naturalist, was educated at Harrow and Oxford. He was prospector to the Zoological Society 1884-1915; formerly lecturer on biology at Guy's Hospital, and examiner in zoology and comparative anatomy at the univ. of London, and of morphology at Oxford. He was also naturalist to the *Challenger* expedition commission, 1882-84. His works are *Animal Coloration*, 1892; *Text-book of Zoogeography*, 1895 *A Monograph of the Oligochaeta*, 1895; and *Structure and Classification of Birds*, 1898.

Beddgelert, i.e. the grave of Gelert, vill., Carnarvonshire, N. Wales, 13 m. S.E. of Carnarvon. It is close to the pass of Aberglaslyn, in which is the rock called the chair of Rhys Goch, the bard (d. 1429). From the vill. lying at the foot of Snowdon, the ascent can be made. Pop. 1100. The traditional grave of Llewellyn's hound, Gelert, is marked by a stone, recalling the legend of the hound who saved his master's child from a wolf and was killed in mistake by the father.

Beddington, dist. of Surrey, England, on the Wandie, 2 m. from Croydon. It has a public park, and an orphan asylum which was formerly the seat of the Carew family. Pop. 26,000.

Beddoe, **John** (1826-1911), Eng. anthropologist and physician, b. at Bewdley, Worcestershire. He was educated at Univ. College, London, and Edinburgh. He served during the Crimean war as a doctor on the civil staff, and from 1857 had a medical practice in Clifton, Bristol. His anthropological works include *The Races of Britain* (1885); *Stature of Man in British Isles* (1870); *The Anthropological History of Europe* (1910).

Beddoes, **Thomas** (1760-1808), Eng. physician, b. at Shifnal, in Shropshire. Entered at Pembroke College, Oxford, 1776, and studied languages, chemistry,

and geology. Came to London, 1781, and studied medicine under Sheldon. He took degree of doctor of medicine at Oxford, 1786, and visited France in the following year. At the outbreak of the Fr. Revolution, he supported the rebels, and in consequence had to leave Oxford. He returned to Shropshire, and wrote the *History of Isaac Jenkins* intended to check drunkenness. In 1794 he married Anna Edgeworth, sister of Maria Edgeworth. He was the inventor of a 'pneumatic' system of therapeutics by inhalation of medicated gases, and set up an institution, which is notable as having provided Humphry Davy with opportunities for his researches.

Beddoes, Thomas Lovell (1803-49), Eng. poet, b. at Clifton, the son of Thomas B. (q.v.). His poetic drama, *The Bride's Tragedy*, 1822, is modelled on Webster and Tournear, and his verse re-echoes that of the Jacobean dramatists. His fantastic and amorphous drama in verse, *Death's Jest-book, or The Fool's Tragedy*, was pub. posthumously, 1850, by his friend, T. F. Kelsall, who was his literary executor, and in 1850-51 pub. a memoir of B. and collected eds. of his poems. Many of B.'s lyrical poems are exquisite, as, e.g., *If thou wilt ease thy heart, and if there were dreams to sell*. From 1824 till his death B. lived a wandering life abroad, chiefly in Germany and Switzerland, but his revolutionary views prevented his remaining long in one place. He committed suicide under peculiar circumstances in 1849 at Basle. See E. Gosse, *Poetical Works of T. L. Beddoes*, 1890, 1928, with the first full account of his life, and *Letters*, 1894; R. H. Snow, *Thomas Lovell Beddoes, Eccentric and Poet*, 1928; H. W. Donner, *Thomas Lovell Beddoes: the making of a Poet*, 1935.

Bede, Bēda, or Bēda, surnamed The Venerable (c. 673-735), Eng. historian, b. in the ter. of the monastery of St. Peter at Wearmouth. When 7 years old he was admitted to this monastery, and studied under the famous abbot, Benedict Biscop, and his successor, Ceolfrid. In 682 Biscop founded the neighbouring monastery of Jarrow, and it is here that B. generally resided. In his nineteenth year he was admitted to the diaconate by St. John of Beverley, then bishop of Hexham, and 11 years later the same bishop ordained him priest. At the end of his *Ecclesiastical History* B. gives us these particulars of himself, and goes on to mention how the observance of the monastic discipline, the daily charge of singing in the church, and the delights of learning, teaching, and writing had made up his holy and tranquil life. His learning was great, covering almost all the subjects then known: Lat., Gk., astronomy, medicine, and probably some Hebrew. His *Ecclesiastical History* is a chief source of knowledge of the early hist. of England. Its facts are derived partly from the Rom. writers, but still more from native sources and traditions. King Alfred trans. it into Anglo-Saxon. B. also wrote scientific works, including a treatise on the calendar, and other historical essays, such as the *History of the*

Abbots of his own monasteries. Another large div. of his work consisted of theological treatises and biblical commentaries. A collected ed. of B.'s works was first pub. at Paris in 1544. See ed. by J. A. Giles, 1843-44; also C. Plummer, *Bedæ Opera Historica*, 1896. An Eng. trans. of the *Ecclesiastical History* is pub. in Everyman's Library.

Bedeau, Marie Alphonse (1804-63), Fr. general, b. and d. at Verton, near Nantes. He was sent to Algeria in 1836, and in 1847 became its governor-general for some time. During the revolution in 1848 he was appointed, by Marshal Bugeaud, commander of one of the 5 columns for its suppression, but proved of little service. He was arrested with Cavaignac and La Moricière in 1851 and banished, but in 1859 returned to his native land.

Bedeaux System, also known as B. point plan, a wage incentive system based on a form of job standardisation covering direct and indirect production work. The employee receives a basic hourly wage until his efficiency exceeds a standard fixed in advance by time study. Production in excess of standard is rewarded by an increasing hourly rate strictly related to production, until for high production it becomes almost a pure piece rate. Thus, if production is 150 per cent of standard, the daily wage earned is 140 per cent of the basic daily wage. The system is similar in principle to other incentive systems involving the 'sharing' of savings resulting from super-standard production between employer and employee. The application is usually accompanied by the fixing of high standards and the exercise of rigid control, but is not concerned with production methods, and has therefore led to industrial disputes and considerable controversy.

Bede, Cuthbert, see BRADLEY, EDWARD. **Bedegar, or Bedeguar** (Persian, wind-brought), name of a spongy gall, found chiefly on the wild rose, and especially on the sweetbrier. It is covered with a mossy growth which is really undeveloped leaves. The gall-insect which produces it is *Rhodites rosæ*. See GALLS.

Bedel, see BEADLE.

Bedell, William (1571-1642), Eng. prelate, b. at Black Notley in Essex. Took holy orders and was chosen fellow of his college, Emmanuel, Cambridge; was chaplain to Sir Henry Wotton at Venice. On his return to England he trans. into Lat. various works concerning the hist. of the Church. In 1627 he became provost of Trinity College, Dublin, and in 1629 was elected bishop of Kilmore and Ardagh; he fought the Catholics in a novel manner, by converting the better among their priests; he aided in the trans. of the Prayer Book and Bible into Erse, and saw that the trans. was read in his diocese. In the rebellion of 1641 he was unmolested at first, but was afterwards imprisoned; he d. in consequence of this. The trans. of the N.T. was pub. at Dublin, 1602.

Bedesman, or Beadsman, an almsman, who offered *bedes* or prayers for his benefactor's soul. Bedesmen were attached

to the churches. In Scotland the king's bedesmen were licensed mendicants, who received maintenance in kind on the king's birthday. Later the word came to mean a pensioner, or the inmate of a hospital.

Bedford: (1) Co. tn. of Bedfordshire, England, and a parl. and municipal bor. It is situated on the R. Ouse, amid fertile pasture lands and corn fields, about 50 m. from London. The riv. banks are tastefully laid out as promenades, and there are 2 large parks. There is considerable trade in mkt. garden and agric. produce. Engines and agric. machines are manufactured. Sir W. Harper (*d.* 1573), lord mayor of London in 1561, is buried in St. Paul's Church. He did much to benefit B., his native place, and endowed an Edward VI. grammar school, and the 'Harper Trust' supports a modern and other schools for boys and girls. The name of John Bunyan is associated with the tn. He was imprisoned in the jail; his chair is preserved, and the Bunyan meeting house is on the site of the chapel in which he preached. B. returns one member to Parliament. Pop. 40,500. (2) Co. seat of Lawrence co., Indiana, U.S.A., 60 m. N.W. of Louisville: shipping port of the Bedford, Indiana, oolitic limestone, the best building stone in the U.S.A., and of which many important buildings have been constructed. It has also cement works and machine shops. Pop. 12,500. (3) Co. seat of Bedford co., Pennsylvania, 35 m. S.W. of Altoona: its many mineral springs attract visitors during summer. In 1758 Fort Bedford, an important military frontier post, was constructed. Pop. 3000.

Bedford College, women's college of London Univ., founded in 1849 by Mrs. Reid to provide a liberal education for women. In 1878 the London Univ. admitted women to degrees, since which date the majority of students at B. C. read for a univ. degree in arts or science (pass or honours), although a general course of advanced study may be chosen. There are also an art school and a training dept. The original buildings were in Bedford Square; it was then moved to York Place, Baker Street, and in 1913 new buildings in Regent's Park were opened by Queen Mary.

Bedford, Dukes of, see RUSSELL FAMILY.

Bedford Level, dist. in England of about 400,000 ac., situated in the counties of Suffolk, Norfolk, Lincoln, Cambridge, Northampton, and Huntingdon. It was once fenland, and was in the first place drained by the earl of Bedford in 1634. A large portion is under cultivation, and colesed and flax are grown. Wild-fowl live in the more marshy dists. in vast numbers.

Bedford Park, London residential dist. in the bor. of Acton, laid out on garden suburb lines.

Bedfordshire, S. Midland co. in England, bounded by Northampton on the N.W., Bucks on the W., Bucks and Herts on the S., by Herts and Cambridge on the E., and Huntingdon on the N.E. Its area is 302,942 ac. The surface is

generally level; a branch of the Chiltern Hills crosses the N.E. and S. The Great Ouse flows through the centre to the E., and is navigable to King's Lynn from Bedford, the co. tn. The Ivel, a feeder of the Ouse, is also navigable. The valley of B. is fertile, and the Ouse valley is noted for its pasture-lands. Wheat is grown, barley, and vegetables. Sheep-rearing is carried on in the S. The industries are engineering and motor works at Luton, straw-plaiting at Luton and Dunstable, printing at Dunstable, and agric. machines and tools at Bedford and Luton. There are limestone quarries in the co., and the world's largest brickworks at Stewartby. Sev. relics of Rom. times and parts of Rom. roads are still to be seen in various parts. The co. is divided into 9 hundreds and 122 pars., and returns 2 members to Parliament. Pop. 221,000. See F. C. Eccles, *The Edwardian Inventories for Bedfordshire*, 1905; *Bedfordshire* (Victoria County History), 1912-14; C. G. Chambers, *Bedfordshire*, 1917; A. Mee, *Bedford and Huntingdon*, 1939.

Bedfordshire and Hertfordshire Regt., The (formerly 16th Foot), regiment of the Brit. Army, raised in 1688 and sent to Holland in 1689, serving in all campaigns down to peace of Ryswick, 1697. After a few years in Ireland it returned to Holland under Marlborough and fought at Blenheim, Ramillies, Oudenarde and Malplaquet. In 1782 it received the title The Buckinghamshire, which it exchanged in 1809 for The Bedfordshire. During the nineteenth century it served in the W. Indies, Ceylon, Bengal, and N. America. Under Sir R. Low it served in the Chitral campaign in 1895. During the First World War it raised 18 battalions for service in France, Flanders, Italy, Gallipoli, and Palestine. In 1919 the title was changed to The Bedfordshire and Hertfordshire Regiment. Units of the B. and H. R. fought on the W. front in the Second World War. Other units also fought on the It. front, and in Burma, where they were part of the Chindit force.

Bedivere, the last knight of King Arthur's Round Table. His adventures are recounted in the *Morte d'Arthur* of Malory. It was Sir B. who bore Arthur's body to the barge and hurled his sword *Excalibur* into the lake.

Bedier, Joseph (1864-1938), Fr. writer, b. in Paris; educated at the École Normale. One of the foremost authorities on Fr. medieval literature, having a gift for moulding legend and tradition into literary forms of grace and distinction. Held chair of Fr. literature at Fribourg (1889-91), at Caen (1891-93), and at the Collège de France (1893-1925), being administrator of the last-named from 1925 until his death. Publications: *Le Roman de Tristan et Yseult* (1900-20); *Les Chansons de croisade* (1909); *La Chanson de Roland* (1921-26); *La Formation des légendes épiques* (1908-17); Elected to the Académie Française in 1920 in recognition of his *Histoire de la littérature française* (1923).

Bedlam (properly **Bethlem Hospital**), London co. mental hospital, originally

founded in 1247 as a priory at Bishops-gate, under St. Mary's of Bethlehem. Later converted into a madhouse, and transferred in 1676 to Moorfields, then in 1815 to Southwark. At one time the inmates were treated in a cruel manner, being exhibited as though they were wild beasts. Hogarth's picture refers to this. 'Bedlam beggars' or 'Tom-o'-Bedlams' were names given to such patients as, being partially cured, were allowed to go at large. In 1931 the hospital was moved into the country and the grounds on which it stood were given by Lord Rothermere as a playground for S. London children.

Bedlingtonshire, urban dist. of Northumberland, England. It is situated 22 m. above the mouth of the Blyth. It has collieries and glass works. Pop. 27,000.



T. Fall

BEDLINGTON TERRIERS

Bedlington Terrier, so named after the tn. of B. in Northumberland. It was first bred there at the beginning of last century, and was for some time only known to the miners of the dist., with whom it was, as now, a favourite sporting dog. It stands about 13 in. and weighs from 18 to 20 pounds; colour blue-black, with black nose, or liver, tan, or sandy with light-coloured nose; the coat is short, crisp, and inclined to harshness; the head is narrow, the muzzle long and powerful; ears set low, and falling close to the head; tail tapering and not carried high; the legs are long and flanks cut up. The B. is a splendid ratter, and full of courage and fight, with remarkable speed.

Bedloe's Island, in New York harbour, U.S.A., lying, together with Governor's and Ellis Is., in the bay S. of Manhattan Is. On it stands the famous statue of Liberty, presented to the nation by France, which dominates New York harbour.

Bedmar, Alfonso della Cueva, Marqués de (1572-1655), Sp. diplomatist. He was appointed to Venice in 1607 to break up a league against Spain with France and the Netherlands. The plot that he was supposed to have planned, in 1618, with the viceroy of Naples, the duke of Ossuna, to capture the city during the ceremonies of the marriage with the Adriatic of the doge of Venice, is the basis of Otway's tragedy, *Venice Preserved*. He left Venice on its discovery and went to the Netherlands as president of the council. He became a cardinal in 1622, and bishop of Oviedo, where he d.

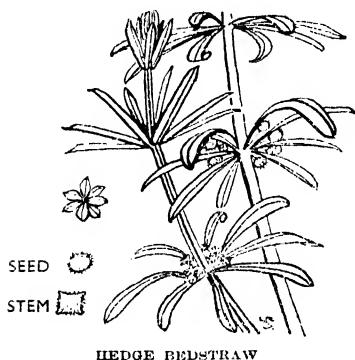
Bedminster, post-township of Somerset co., New Jersey, U.S.A., about 15 m. S.W. from Morristown. Pop. 2000.

Bed of Justice, originally the throne of the Fr. king, when he was present at the sitting of Parliament. The term signified an occasion when the king overruled parl. decisions, on the principle that his authority was paramount to that of his Parliament, since the latter was his delegate, Louis XVI. held the last B. of J. in 1788, and then he ordered the whole Parliament to be imprisoned.

Bédos de Celles, Dom François (1709-1779), Benedictine monk of St. Maur, was b. at Caux. He was a master in the knowledge of organ-building, and pub. *L'Art du facteur d'orgues* in 1766 to 1778.

Bedouins, i.e. the people of the open land or desert, Arab. *Ahl-bedur*, *Bada-win*, or, as they also call themselves, *Ahl-el-beit*, the people of the tent. According to Arab traditional ethnology, the B. are Mustarabs, naturalised Arabs, the descendants of Ishmael, as distinguished from the pure Arab descended from Shem; thus the latter are the agric. settled Arabs, the B. the nomad pastoral people. The earliest home of the B. was N. Arabia, Hejaz, and Nejd, from whence they spread in early times to Syria and Mesopotamia, and to Egypt and Tunisia. The name has lost much of its true racial significance, for it is often applied to many Hamitic nomad tribes, such as the Bisharin and Hadendos in Lower Egypt and the Sudan, while true B. have settled in vils. and become agric. Physically, the B. of N. Arabia are slight and wiry rather than strong, and below the middle height; in colour, brown, deepening in shade in the S. The features are good, with aquiline nose. Their organisation is tribal, their leader the sheikh, chosen for his qualities, whether of wealth, birth, or courage. Living in tents and moving from well to well and pasture to pasture, the organisation is loose, and intertribal feuds are common, with constant cattle raidings. They were notorious plunderers of caravans and travellers, and a regular toll was paid by the Turkish Gov. to these tribes through whose ter. passed the pilgrimages to Medina and Mecca. The building of the Hejaz railway caused much disturbance in consequence among the tribes. Regarding all travellers as trespassers, they nevertheless respected a safe conduct or passport which could be obtained by payment from a sheikh. The proverbial Arab hospitality was then

freely extended. Though professing Mohammedanism, they are by no means strict observers, except under pressure from the Wahabis, as in Nejd. Polygamy is rare, but the marriage tie is loose. The dress of the men consists of a long skirt and a black camel's-hair cloak, with a black or striped headcloth; the women wear white trousers and skirt, with a large blue cloak which they draw over the face before strangers. The chief authorities are J. L. Burckhardt, *Notes on the Bedouins and Wahabis*, 1831; C. M. Doughty, *Arabia Deserta*, 1882; W. S. Blunt, *Bedouin Tribes*, 1879; Lady Anne Blunt, *Pilgrimage to Nejd*, 1881; Hill Gray, *With the Bedouins*, 1890; S. M. Zwerner, *Arabia, the Cradle of Islam*, 1900; A. Kennett, *Bedouin Justice*, 1925. See also bibliography under ARABIA.



HEDGE BEDSTRAW

Bedsore, sore or type of ulceration which may afflict a patient who is confined to bed through illness, accident, or old age, especially if unable to move freely and often. Constant pressure on one surface causes a loss of vitality to the surrounding tissues through stoppage of the circulation, and results, if neglected, in a discoloration of the skin, then a slough, and finally a deep ulcer. The parts most liable are the base of the spine, the hips, shoulders, heels, and elbows, and the back of the head. The tendency to rapid formation of B. varies with the weight of the patient, his capacity to move, etc., but want of cleanliness, the wetting of bedclothes and bedding from perspiration and excretions, rucked or untidy sheets are the chief exciting causes. A patient should, therefore, be kept scrupulously clean, and washed with soap and water daily, all damp clothing at once changed, the sheets kept smooth and the parts liable rubbed briskly; the skin on these parts should also be rubbed with methylated spirits, eau-de-cologne, whisky, or other stimulant, and dusted with boracic acid or prepared starch powder. A water-bed or an air-cushion for the exposed parts is a good protection and of the utmost use if a B. has formed. Should a slough form, continued fomenta-

tions will bring it away, when the sore can be dressed with boracic ointment, or if persistent in not healing, friar's balsam, red lotion, or zinc ointment may be applied; an ointment containing gentian violet is now often used for bedsore and other skin troubles.

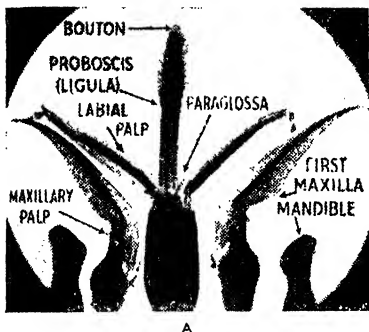
Bedstead, though applied originally to the place in which a bed was located, is a term now employed to indicate the framework of the bed. See BED.

Bedstraw, name of the genus of Rubiaceae known as *Galium*, related to wood-ruff and madder. *G. aparine* is often called goose-grass or cleavers; *G. verum* (yellow or lady's bedstraw), *G. mollugo* (great hedge bedstraw), and *G. cruciatum* (crosswort) are common in Britain.

Bedwelty, par. of W. Monmouthshire, Wales. It is situated 7 m. S.W. of Pontypool, and has a pop. of 30,000. It has coal mines and iron foundries.

Bedworth, tn. of Warwickshire, England, 5 m. from Coventry, on the Nuneaton-Coventry branch of the railway. The Coventry Canal serves it for the carriage of its coal and ironstone mined there, and there are ironworks and brickfields. Pop. 12,000.

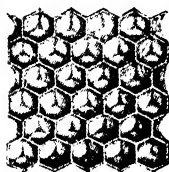
Bee, name of a group of insects in the order Hymenoptera, which includes ants, wasps, saw-flies, Ichneumon-flies, and many other creatures with 4 membranous wings, the thorax and abdomen fused, well-developed mandibles, and an ovipositor in the female. The B's. themselves constitute the family Apidae, or Anthophila, which is sev. times subdivided, and in addition to the above characteristics, they all agree in having the head united to the thorax, females with poisonous stings, males with antennae divided into 13 segments, females into 12 segments. In character they may be social or solitary, and the functions of life are divided among undeveloped females or workers, males or drones, and a highly developed female or queen B. There are about 1500 known species of B's. exhibiting various degrees of specialisation and intelligence. The queen B. is larger in size than her fellows, and permits no rival in her home, so that in each hive there is only one queen, who may be distinguished by the yellowness of the under-part of her body, the absence of pollen-baskets and wax-pockets. Despite her short wings, she is capable of flying to a great height, and when she is pursued by her suitors, numbering probably 10,000, she rises in the air until all but one have failed to reach her. The object of the nuptial flight accomplished, the male falls dead to the earth, and the queen returns to her hive to renew her race. The eggs are laid in special cells prepared for workers, drones, and a few queens, and may be laid at the rate of about 3000 in one day. The eggs are bluish-white, about one-twelfth of an in. long, and hatch in about 3 days into worm-like larvae. The young grub is fed by the workers for about 5 days on food previously masticated for them, then all receive unmasticated food but the future queens, which are fed on a specially prepared royal jelly. The food is believed



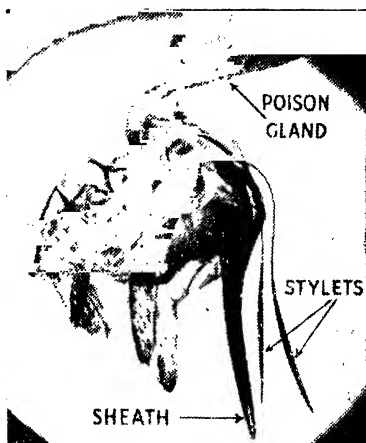
A



C



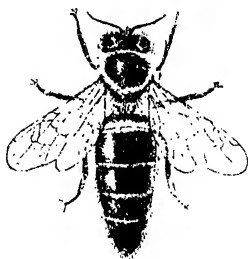
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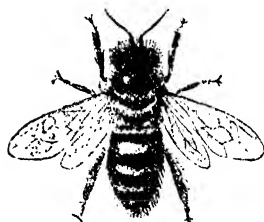
B



F



E



THE HONEY-BEE

A, mouth parts; B, the sting; C, waxen cells in section; and D, in elevation; E, female (queen); F, male (drone); G, unfertile female (worker).

to affect greatly the reproductive system of the B.; the material fed to the workers lacks the reproductive vitamin E, so that the reproductive organs fail to develop. Vitamin E is present in royal jelly, stimulating the production of queens from larvae which receive it; if, indeed, the hive requires a queen, a worker-grub is often carefully fed on royal jelly until it develops into the superior creature. After a few days the grub has stored sufficient food for a fast, the workers seal up its cell,

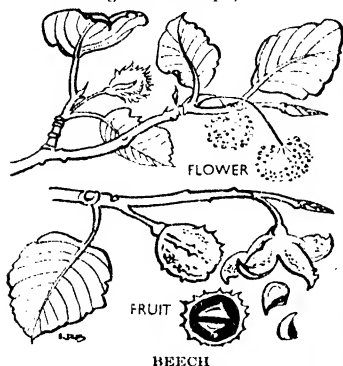
it spins its cocoon and rests in the pupa state. After about 3 weeks from the day of egg-laying, the imago breaks from the cocoon, is assisted by the workers in detaching and cleaning itself, rests for a day or two, then takes up its work in the hive, and its cell is utilised for another egg or for the storing of honey. The queen pupa, however, is shut up and fed until her piping voice indicates that she has matured sufficiently, when she is released and immediately attempts to kill off all

rivals. In the early summer the process called swarming takes place. A number of Bs., accompanied by the old queen, rush from the hive, fly for some little distance, then settle in a thick cluster on some object near by. They then proceed to make a new hive, the workers constructing combs from wax secreted in their bodies, and the queen is then able to deposit her eggs. At this stage of their existence the Bs. carry with them a great deal of honey from the previous hive, and they are so quiet that they may be handled almost with impunity. As the new queens appear in the old home they may lead off new swarms, as many as 3 occurring in one summer, which prevents over-population. The bee-keeper aims at preventing swarming, with consequent loss of stock and honey, by destroying new queen cells or in other ways. It occasionally happens that a worker-B. produces eggs, but these invariably develop into drones, which merely increase the size of the swarm. The drones of the hive are males which make a peculiar, dull sound when flying, and thus receive their name. They are also distinguishable by their large eyes and the extra segment of their antennæ. Beyond assisting in the fertilisation of the queen they appear to be of no value to the hive, and in the autumn the workers turn them out and kill them wholesale. The workers are provided with 2 peculiar structures, a wax-pocket situated under the middle joints of the abdomen, and a pollen-basket, which is a dilatation of a joint of the hind tarsi. Pollen is brushed into the basket by means of the pollen brush on the hind leg of the opposite side, and furnishes the B.-bread necessary for the nutriment of the young. The nectar is collected by the long, hairy tongue of the worker, and is converted into honey in the honey-bag, where it is stored up until used as food or deposited in the comb. In times of scarcity, the honey-dew secreted by aphides is collected, and Bs. also gather a resinous matter known as propolis from trees to use it as cement in their hives. The poison is composed of a transparent fluid, containing formic acid and other irritants, which remains in a venom-bag, and the sting is curved in such a way that if once used it is difficult of withdrawal, and its use frequently results in the death of the B. The life of a worker-B. is short, usually lasting for 6 weeks, and into this space of time it crowds the honey and pollen gathering, the care of the larvæ, building and cleansing of the hive, and its ventilation by means of their wings when it has grown too warm. The queen B. may live for 3 summers. The intelligence of the B. has, from the time of Aristotle, Virgil, and Pliny, been recognised as surpassing that of any other insect, though experiments indicate that most of its actions are in reality governed by instinct. The return to the hive, for instance, after promiscuous wandering to considerable distances is made on a homing line which, once commenced, cannot be deviated from by a fraction. As regards its senses, the sight is highly developed, as well as

the power of smell. It has organs of taste, and is able to hear; the antennæ are the highest organs of sensation. The worker-B. can communicate indications of direction (where, for example, food may be found) to its fellows by two different movements of aerial dances. During the winter months it becomes torpid, its respiration is lessened, and it consumes little food, but in the spring the activity of its life is recommenced. The enemies from which it suffers are other insects, larvæ, and birds. The B.-louse, or *Braulta cæca*, is a parasite which attaches itself to the thorax of a B.; the death's-head moth, *Acherontia atropos*, also attacks the B.; the old-world family of birds named *Mecropidæ* consists of B.-eaters. Other creatures devour the larvæ, various lice infest the bodies of the different species, and even Bs. themselves are sometimes parasites in the hives of more industrious neighbours. The Isle of Wight disease, much feared by bee-keepers, is caused by a mite, *Tarsonemus*, which infests the breathing tubes (tracheæ) of the B.; the disease is highly infectious. The primitive B. from which others seem to be derived is the *Prosoptis*, a weak and solitary form, with few hairs, unmodified hind legs, and a short proboscis; the nest is built in crevices in walls, and on bramble-stems. Another solitary genus is *Colletes*, which digs a burrow in the ground and forms a colony in the mortar of walls. The *Sphecodes* include 4 Brit. species, and seem to be sometimes parasitic, sometimes industrial. The *Andrena* is the largest genus, having over 60 Brit. species; it burrows in sandy or gravelly soil, and appears in early spring. *Dasydota* also digs holes in the earth, while *Halictus* lines its oval underground cells with a varnish which is probably formed from saliva. The genera *Stelis* and *Nomada* are purely parasitic, the former laying its eggs in the cells of *Osmia*, the latter in those of *Andrena*. *Xylocopa*, a solitary B., is sometimes called a carpenter-B., from its habit of boring large holes for its cells in timber; in appearance it is very hairy, and it is amongst the largest species of Bs. *Chalicodoma* is a mason-B., which covers its 8 or 9 cells with a large dome. *Megachile* is the leaf-cutting B., which makes its cells of pieces of leaf joined together. *Anthidium* places its cells in empty snail-shells, and *Osmia* makes use of previously formed cavities. The chief social Bs. are well represented in Britain by *Bombus*, the humble-B., and *Apis mellifica*, the honey-B., the habits of which have been described above. *Apis dorsata* is an E. B., which builds a comb 5 or 6 ft. in length; *A. indica* is a native of S. Asia; *A. florea* inhabits the W. Indies; *A. adansonii* is found in W. Africa. See also BEE-KEEPING and HUMBLE-BEE. See Sir J. Lubbock, *Ants, Bees, and Wasps*, 1882; E. Saunders, *Hymenoptera Aculeata of the British Islands*, 1896; M. Maeterlinck, *La Vie des abeilles*, 1901; O. H. Latteus, *Bees and Wasps*, 1913; E. T. Edwards, *The Lore of the Honey Bee*, 1929. K. von Frisch on 'dance-language,' *Experientia* (Basel) 1947.

Beebe, Charles William, Amer. ornithologist, b. Brooklyn, N.Y., in 1877. Educated Columbia Univ. Appointed, 1899, curator of ornithology, New York Zoological Society. Organised the collection of birds, New York Zoological Park. Has headed many expeditions in both hemispheres. Among his numerous publications are: *Two Bird-lovers in Mexico*, 1905; *The Bird: its Form and Function*, 1907; *Tropical Wild Life in British Guiana*, 1917, etc.; *Monograph of the Pheasants*, 1918-22; *Galápagos, World's End*, 1924; *The Arcturus Adventure*, 1926; *Beneath Tropic Seas*, 1928; *Half Mile Down*, 1935.

Beech, name of sev. species of *Fagus*, the typical genus of Fagaceæ. The common B., *F. sylvatica*, forms large forests throughout Europe, and is valued



for its wood, which is used in the manuf. of small articles, e.g. sabots and household utensils, but is of little value to the joiner as it is liable to rot when exposed to air. The bark is employed in tanning, the catkins for packing, while the nuts yield a volatile oil and are frequently used for fattening pigs. Although the trees may grow to a height of 100 ft., they are often grown in a stunted form, and clipped to make hedges. The flowers appear only every few years, the male flowers forming pendulous catkins, while the females grow in pairs within a mass of scales, which later develop into a cupule enclosing 2 nuts. The copper and purple Bs. are well-known varieties of *F. sylvatica*, and are noted for their bright-coloured leaves, as is the red B. of America, *F. ferruginea*. The evergreen B., *F. betuloides*, is known as the myrtle-tree in Australia; *F. obliqua* is the oblique-leaved; *F. fusca*, the New Zealand B.; the weeping B., fern-leaved B., and crested B. are the varieties *pendula*, *asplenifolia*, and *crinata* of *F. sylvatica*. Other trees known as Bs. belong to various other genera, and among them may be noted *Carpinus betulus*, white B., or hornbeam; *Erostemma caribæum*, sea-side B.; *Populus alba*, Dutch B., or white poplar; *Platanus occidentalis*, water beech.

Beecham, Sir Thomas, second Baronet, Eng. musician and impresario, b. Apr. 29, 1879, at Liverpool; son of Sir Joseph Beecham, first Baronet, and grandson of Thos. Beecham, who founded Beecham's Pill business, St. Helen's. B. was educated at Rossall School, Fleetwood, where he was taught harmony by Edward Thomas Sweeting; and at Oxford (Wadham College), where he had lessons from J. V. Roberts. He conducted an amateur orchestra, collected by himself, at Huyton, 1899; conducted for Kelson Truman's travelling opera company in 1902; and in 1905 he became known as a conductor in London, where he founded the New Symphony Orchestra in 1903. Left it and founded the Beecham Symphony Orchestra, 1908. In 1910, became lessee of Covent Garden theatre, and entered upon production of opera. It was he who first produced Russian ballet in England, 1911; and who introduced Chaliapin to the Brit. public, 1913 (Drury Lane). He was knighted 1916, and succeeded to the baronetcy the same year. He continued to give opera throughout the war, at heavy loss to himself. Was inactive 1920-27, but since made great efforts to estab. opera permanently in England. He pub. *A Mingled Chime* in 1944. See COVENT GARDEN THEATRE.

Beechdrops, or **Cancer-root** (*Epiphegus virginiana*), parasitic herb of the order Orobanchæ; found in the roots of beech-trees in N. America.

Beecher, Charles (1815-1900), Amer. Congregational minister. The fourth son of Lyman B., and brother of Harriet Beecher Stowe. He officiated as pastor of the second Presbyterian church, Fort Wayne, Indiana, 1844-51; first Congregational church, Newark, New Jersey, 1851-54; Congregational church, Georgetown, Massachusetts, 1857. He d. at Haverhill, Massachusetts, in 1900. He ed. his father's letters and autobiography (2 vols., 1864-65). Author of *Pen Pictures of the Bible*, 1855; *Spiritual Manifestations*, 1879; *Eden Tabernacle*, 1880.

Beecher, Henry Ward (1813-87), Amer. Congregational minister, son of Lyman B. and brother of Harriet Beecher Stowe, b. at Connecticut, June 24. He graduated in 1834 at Amherst College, Massachusetts, and later read theology under his father at the Lane Theological Seminary. In 1847 he accepted the pastorate of Plymouth Congregational church, Brooklyn, New York. He was one of the founders of the *Independent*, which he ed. in 1861-63. He favoured the Republican candidates in the presidential contests of 1856 and 1860, and, on the outbreak of civil war, his church raised a volunteer corps for active service. From 1870 to 1881 he ed. the *Christian Union*. The chief of his pub. writings are: *The Star Papers*, 1855-58; *Lectures to Young Men*, 1844 (revised ed. 1850); *Aids to Prayer*, 1864; *Norwood, or Village Life in New England*, 1867; *Yale Lectures on Preaching*, 3 vols., 1872-74; *The Life of Jesus the Christ*, 2 vols., 1871 and 1891; *Evolution and Religion*, 1885. See his *Life*,

by Joseph Howard jun., 1887; and a biography by W. C. Beecher, Rev. S. Scoville, and Mrs. Beecher, 1888; also his *Autobiographical Reminiscences*, ed. by Ellinwood, 1898.

Beecher, Lyman (1775-1863), Amer. Presbyterian minister, father of the Harriet Beecher Stowe. He was among the foremost preachers of his time. In 1832 he was appointed president of Lane Theological Seminary, near Cincinnati, a position which he held till 1852. He was arraigned for heresy, but was acquitted and became the recognised leader of the new school of the Presbyterian Church. His autobiography and letters were ed. by his son, Charles Beecher (1864-65).

Beecher Stowe, Mrs. Harriet Elizabeth, see STOWE.

Beechey, Frederick William (1796-1856), Eng. admiral and geographer, was the son of Sir W. B., the painter. He was with Franklin in the N. Polar expedition of 1818, and with Parry in 1819, and co-operated with them in 1825. B. is., in Barrow Strait, is named after him. He was on the Mediterranean N. African survey, 1821; S. Amer. survey, 1835; and Irish coast survey, 1837-47; and was president of the Marine Dept. at the Board of Trade, 1850. Promoted rear-admiral, 1854.

Beechey, Sir William (1753-1839), Eng. portrait painter, b. at Burford. He attended the Royal Academy as a pupil in 1772. In 1793 he became an associate of the Academy, and in that year also he was chosen to be portrait painter to Queen Charlotte. He was rewarded with a knighthood and the title of R.A. in 1798 for his picture of a review of cavalry, in which he portrayed George III., the Prince of Wales, and the duke of York.

Beechey Island, in the Arctic Archipelago, lying off the coast of Canada in the Barrow Strait. On it have been erected various memorials to Arctic explorers, including one to Franklin, who wintered on the is. in 1845, and to Lieutenant Bellot, who d. with a Brit. expedition in 1853. Mean temperature about 3-5° F.

Beeching, Henry Charles (1859-1919), Eng. author and divine. He became canon of Westminster Abbey, 1902-11, and dean of Norwich, 1911. He was select preacher at Oxford Univ., 1896-97, and at Cambridge, 1903-09; prof. of pastoral theology, King's College, London, 1900-3; and chaplain of Lincoln's Inn, 1900-3. His numerous publications include: *Love in Idleness*, 1883, and *Love's Looking-Glass*, 1891 (in collaboration with 2 others); *In a Garden, and other Poems*, 1895; *Religio Laici*, 1902; *The Grace of Episcopacy*, 1906; *Francis Atterbury*, 1909; and *Revision of the Prayer Book*, 1910.

Beeching, James (1788-1885), Eng. inventor, b. at Bexhill, near Hastings. He went to Flushing, where he constructed the famous *Big Jane*, a smuggling craft. He won £1000 as a prize for his invention of a self-righting lifeboat.

Beechworth, tn. in the co. of Bogong, Victoria, Australia. It is the centre of the Ovens gold area. Pop. 7500.

Beeder, see BIDAR.

Bee-eater, the typical genus *Merops* of the family Meropidae, which has an extensive range over Africa, India, and Australasia. They are slender birds, with long bill and pointed wings, with a flight like a swallow, which in shape they resemble. They are brightly coloured, green predominating. They feed on bees, wasps, and other insects. The European B. is *Merops apiaster*, which migrates from Africa, where it breeds, to S. and Central Europe; it nests in colonies in holes dug out by its long bill in sandy riv. banks. It is rarely seen in Great Britain.

Beef, term applied to the flesh of an ox, bull, or cow when killed. Prepared in different ways, it serves as food in many countries. See COOKERY.

Beef-eater, see YEOMAN OF THE GUARD.

Beefsteak Clubs, certain London clubs, formed for social purposes, where the refreshment was limited to steaks, with beer or wine. The earliest of these was founded in 1709, and included the wits and chief men of the day, with Richard Estcourt, the actor, as providore. The 'Sublime Society of Steaks,' founded in 1735 by John Rich, the manager of the Covent Garden Theatre, and Lord Peterborough, is the most famous of these clubs. It numbered among its members, Garrick, Hogarth, Wilkes, John Kemble, and in 1785 the Prince of Wales joined the club. When the Covent Garden was burnt down in 1808, the club moved to the old Lyceum; afterwards it had rooms in the Bedford Coffee House, and finally in 1838 the 'Steaks' moved to the new Lyceum and there dissolved in 1867. *Consult Arnold's Life and Death of the Sublime Society of Steaks*, 1871. A B. Club was founded in 1749 by Thomas Sheridan (the actor and father of Richard Brinsley Sheridan), in connection with the Theatre Royal, Dublin, and Peg Woffington was elected president. The present B. Club in London was founded in 1875 by A. J. Stuart-Wortley with rooms in Toole's Theatre. Its premises are now at 9 Irving Street, London.

Beef-tea, extract of beef, used as a valuable stimulant and restorative in cases of illness. It has little or no nutritive value, and in certain cases, such as kidney disease or gouty or rheumatic affections, should not be taken. It is especially useful for children and for surgical cases after operation or in other conditions where alcohol cannot be given safely. It consists merely of the blood and juices of the meat, but little of the albumen and gelatinous constituents, as are contained in various commercial meat extracts.

Beef-wood, kind of wood, very hard and durable, that makes excellent timber. It is so called because it resembles raw beef in colour. The name is applied to trees of 2 different genera—the *Swartzia*, belonging to the order Leguminosae, in Guiana, and trees of the order Casuarinaceae, in Australia.

Beehive House, building, of primitive architecture, made of unewn stones and without mortar, specimens of which are

to be found in Ireland and W. Scotland. They consist of long stones laid down in a circle, and each course is overlapped by the one resting immediately above it, and with the circular roof it resembles a bee-hive in shape. From the seventh to the twelfth century churches, priests' houses, and other buildings were formed after this fashion.

Bee-keeping, practice of cultivating bees for the benefit of their honey. The origin is extremely anct., but it is only within the last 100 years that it has been proved a source of profit to the agriculturist. It is no longer necessary for bees to construct their own hives and combs, and as wax is provided for them their labour is so much lightened that the output of honey has increased to an enormous extent. In former days 40 lb. was considered to be an average amount collected, but now the average is doubled, and as much even as 400 lb. has been obtained from a single hive. In the winter the surviving bees are usually allowed about 20 lb. of honey for their use, and this may be supplemented by various syrups as they are required. In the spring they need a supply of extra food, but in the summer all that is required in this direction is that the hive should be placed in a spot surrounded by suitable flowers. In Scotland the hives are moved to localities in which heather is abundant, to obtain the rich dark heather-honey. During the spring, when the bees begin to swarm, the keeper is careful to prevent them from emigrating beyond his power. Usually when the cluster appears he covers it with a straw skep, and when the various members have settled in it they are transferred to their new hive, but artificial swarming is sometimes used when a queen is placed in a new hive situated on the position of the old one. A swarm consists of about 40,000 to 50,000 insects. Modern B. owes much to the Amer. clergyman, the Rev. L. L. Langstroth, who in 1851 produced a hive in which movable combs, built in frames, hung side by side. Later it was found that bees would use thin sheets of beeswax, called comb foundation, stamped with an outline of the cell, if it were put near their hives. It has also been found possible to remove the honey from the wax without injuring the cells, by means of a rotating machine. Honey sections are also placed in hives so that the substance may be sold in a very marketable form. In obtaining honey the person about to extract it usually covers all unprotected parts of his body as a guard against stings. He then stupefies the bees with smoke, chloroform, or by some other means. See J. C. Digges, *Practical Bee Guide*, 1904; A. M. Sturges, *Practical Bee-keeping*, 1924; A. Gilman, *Practical Bee Breeding*, 1928; J. A. Lawson, *Honeycraft*, 1931; S. B. Whitehead, *Honey Bees and their Management*, 1946.

Beelzebub (the god of flies, from Heb. *baal*, lord, *zebûb*, fly), Philistine god, whose temple was at Ekron. It is now thought that the word developed from Baal-Zebul, i.e. lord of the high house.

The Jews regarded all heathen gods as devils, and accordingly B. or Baalzebub appears in the N.T. as the prince of demons.

Beemster, polder in the Netherlands. It is situated 13 m. N. of Amsterdam, and has a pop. of 5300.

Beer, see under BREWING; BARLEY.

Beer Acts. The sale of B. in England is under magisterial control, though in the early part of the nineteenth century licences could be obtained without application to magistrates. In 1869 the Wine and Beerhouse Act was passed, regulating the sale of B. By this Act a licence was estimated at a third of the ann. value of the beerhouse premises, and a minimum value was fixed, based on the pop. of the neighbourhood. For the first hundred barrels the brewers paid a tax of £1, and on every additional fifty 12s. Since those days beer has been subject to almost continuous taxation. The granting of licences, however, remains with the magistracy sitting in what are called Brewster Sessions. See LICENCES AND LICENSING LAWS for later legislation.

Beer-Alston, vil., previous to 1832 a parl. bor. in the par. of Beer Ferrers, 8 m. from Plymouth, England. Pop. of Beer Ferrers or Bereferis, 1800.

Beerbohm, Sir Max, Eng. writer and caricaturist, b. in London, Aug. 24, 1872, youngest son of Julius K. Beerbohm and Eliza Draper, and half-brother of Sir Herbert Beerbohm Tree. Educated at the Charterhouse and at Merton College, Oxford. First became known as a writer through the *Yellow Book* quarterly, 1894-97. Dramatic critic to the *Saturday Review* for 12 years from the retirement of Bernard Shaw in 1898. His book, *Around Theatres* (1924), contains articles contributed to that journal over a period of 12 years. His first pub. vol. of drawings, *Caricatures of Twenty-five Gentlemen*, appeared in 1896, the same year in which he issued a vol. of essays entitled *The Works of Max Beerbohm*. His later caricatures are in the vols.: *The Fort's Corner* (in colour), 1904; *A Book of Caricatures*, 1907; *The Second Childhood of John Bull* (in colour), 1911; *Fifty Caricatures*, 1913; *A Survey*, 1921; *Rossetti and his Circle* (in colour), 1922; *Things New and Old*, 1923; *Observations*, 1925. His other books are: *The Happy Hypocrite*, 1897; *More*, 1899; *Zuleika Dobson* (his one novel), 1911; *A Christmas Garland* (prose and verse parodies), 1912; *Seven Men*, 1919; *And Even Now*, 1920; *Yet Again*, 1923; *The Dreadful Dragon of Hay Hill*, 1928. From 1910 until Italy entered the World War in 1940, he lived at Rapallo, from which retreat he surveyed the world with humour and detachment. He was knighted in 1939. From time to time successful exhibitions of his original drawings have been held in London. After his return to England during the war he gave 2 memorable broadcasts, and in 1943 he delivered the Rede Lecture, choosing Lytton Strachey's works as his subject. He returned to Rapallo in 1947. Both as a writer and as an artist he has a fastidious and carefully finished

style, aiming at nothing short of perfection. Wit, elegance, humour, power of satire, and yet a human sympathy are his characteristics. See Bohun Lynch, *Max Beerbohm in Perspective*, 1921.

Beer-money was an allowance of one penny a day to soldiers of the Brit. army in lieu of a supply of beer, instituted in 1800 and abolished 73 years later. It was also given to servants by householders instead of providing them with beer.

Beeroth, O.T. name for the modern Bireh, a vil. in Palestine, 9 m. N. of Jerusalem.

Beersheba (well of the oath, or possibly seven wells), tn., in anct. geography, in the extreme S. of Palestine, 50 m. from Jerusalem. The expression 'from Dan to B.' was indicative of its southerly position. The covenant of Abraham and Abimelech, king of the Philistines, was made there. Its Arabian name is Bir-es-Seba, meaning well of the lions. According to Eusebius, it was in his time a prosperous mkt. tn. and possessed a Rom. garrison. In early Christian times bishops of B. are occasionally mentioned, but by the fourteenth century the tn. had lost all importance. The wells played a prominent part in the hist. of the patriarchs: B. being the scene of Hagar's trial and Ishmael's miraculous preservation; of Abraham's covenant with Abimelech, and of Jacob's setting forth on his journey to Haran (Gen. xxi., xxvi., xxviii.). Two of the wells still have supplies of water and 5 others have been discovered. It is now a small tn. of under 3000 inhabs. There is a Brit. military cemetery. During the First World War B. was captured from the Turks on Oct. 31, 1917, by General Allenby's troops, and it was from B. that the advance was made which resulted in the capture of Gaza.

Beestings, or **Beastings**, name applied to the first milk taken from a cow or other animal after parturition. It is thicker and more yellow than ordinary milk. It has a larger percentage of albumin and salts in its composition, but not so much casein.

Beeston, par. in the co. of Nottingham, England, and situated 3 m. S.W. of that tn.; it has manuf. of lace and hosiery. Pop. 16,000.

Beeswax, substance produced by bees and used by them in the construction of the honeycomb. The wax is secreted by special glands in the abdomen of the bee, is pressed out between the segments of the body and moulded into roughly circular cells for the reception of the eggs and honey. It may be collected by draining off the honey and heating the residue in water, when it rises to the surface and solidifies on cooling. B. is used for making candles, for modelling or casting ornaments or effigies, for polishing floors and furniture, and in medicine as a basis for ointments and plasters, on account of its non-irritant quality. It is sometimes taken internally, when it acts as a protective to the gastric and intestinal surfaces.

Beeswing, term for a film as delicate as the wing of a bee, which appears some-

times as a crust on port and other wines, and indicates their age.

Beet, name applied to sev. species of *Beta* of the order Chenopodiaceæ. The roots of many species are valued as a food, and *Beta vulgaris*, the common B., is used in the manuf. of sugar. *B. maritima*, sea or wild B., is eaten as a vegetable as well as *B. rubra*, the red beetroot. *B. cicla*, white beetroot, is cultivated for its leaves, which are eaten like spinach. From *B. vulgaris* is derived the variety *rapa*, the sugar B., and also the mangel-wurzel. The production of B. sugar on a large scale has been promoted for some years in Germany, U.S.A., and in other European countries, while efforts have been made to stimulate its production in Great Britain, at some expense, it is true, to cane sugar production in the Brit. W. Indies. A gov. subsidy was granted after the First World War and has been reviewed recently. In 1937-38 the subsidy was £2,250,000, in 1938-39, £2,550,000. Half the world's supply of sugar is now derived from the beetroot. The estimated average ann. world production (all countries) of sugar B., 1940-44, is 75,000,000 tons.

Beet-fly (*Anthomyia betæ*), insect, so called because the maggots feed on beet leaves. As soon as the maggots are hatched they begin to feed on the leaf round them and continue feeding for one month, when they turn to chestnut-brown pupæ. The flies come out a fortnight later and are grey in colour with black hairs.

Beethoven, Ludwig van (1770-1827), Ger. musical composer, was of Belgian descent. His grandfather, Louis, left Antwerp in 1732 and settled in Bonn, where he became one of the archbishop-electors' musicians. His son (father of Ludwig) was a tenor singer at the court, but through drink and thriftlessness was always poor. The grandfather d. when Ludwig was only 4 years old, but the latter, to whom he had been kind, always cherished his memory. Ludwig's father taught him to play the violin and clavier; he displayed such precocity that at 9 he had to be placed under more accomplished teaching. At 12 years of age he occasionally acted as deputy for the court organist, and at 13 pub. his first composition. In 1784 he was appointed assistant organist to the court, and conducted the orchestra at the opera. Three years later, during a short visit to Vienna, he played before Mozart, who was amazed at his talent in improvisation, and gave him a few lessons. For the next few years his life at Bonn was a trying round of hard work and responsibility; his mother d., and his father's habits became so disorderly that his salary had to be paid to Ludwig, who thus, at about 19, became head of the family. In 1792 the archbishop-electors (brother of the Emperor Joseph II.) sent him to Vienna to study under Haydn, with whom, however, he did not get on well. B. was clumsy in manner and speech, a contrast to Mozart, just dead, whom Haydn had intensely admired; thus Haydn treated the

newcomer coldly, and he in return undervalued his teacher. In spite of this he worked his way by hard work and genius, and in a few years was a 'personage' in the musical world of Vienna, in spite of an ungovernable temper and rude manners. For example, at the house of Count Browne, he was playing a duet when a young nobleman in the room persisted in talking to a lady. B. stopped suddenly, saying loudly: 'I play no longer for such hogs.' Of a suspicious nature, he was insulting to those he suspected, even people of high rank. Haydn nicknamed



BEETHOVEN

him 'The Great Mogul.' Yet the aristocracy bore with it all for the sake of his genius. Princesses and countesses would forgive any rudeness, would receive his lessons wherever he pleased, and put up with his storming and tearing up their music if they were careless. He had no tact or discretion in matters of ordinary life. He was peculiar in appearance, 5 ft. 5 in. in height, broad-shouldered, large-headed, and ruddy in complexion. As a teacher he was impatient but painstaking; in piano playing he was quiet, but extravagant in conducting. He was so absent-minded that he once insisted on paying a waiter for a dinner he had not had or even ordered. It must be said in excuse for his peculiarities that his early troubles had affected his health and spirits. When he *d.*, a post-mortem examination proved that he had suffered since childhood from an incurable disease aggravated by want of home comfort and good food, and later by unskillful medical treatment. His liver had shrunk to half its proper size, and there were serious ailments of old standing in the ears and pharynx.

His family, too, tried him greatly; his father's character has already been mentioned, and his brothers, Johann and Caspar, the latter in particular, caused him endless trouble, and when the latter *d.* his son turned out worse still, in spite of all his uncle's self-denying endeavours on his behalf. In a pathetic document written by B. as far back as 1802, addressed to his brothers, he complains of the harsh judgments passed upon him by those who knew nothing of the years of suffering he had endured, and tells of the dread which he felt of his growing deafness, which would incapacitate him for the enjoyment both of society and of his beloved art. This deafness in time became so complete that although he still played and conducted he heard nothing of the music. His finest works were composed after he had lost the power of enjoying them. His life ended sadly. In the winter of 1826-27 he was staying at the house of his brother Johann, and was taken ill. His brother would neither let him have a fire in his room nor give him the food he required, and at length sent him back to Vienna, during bad weather, in an open chaise; he took a severe chill, which brought on dropsy, and he *d.* on Mar. 26. As a musician B. stands alone. In his earlier work the influence of previous masters, especially Mozart, may be traced, but gradually he built up a style of his own, more and more noble as years went on. His total production is broadly divisible into 3 periods. In the first, although influenced by his predecessors he already began to show such individuality that, for example, Haydn advised him not to publish his Trio in C minor (Op. 1, No. 3), probably as being too daring for public taste. To this first period belong his Sonata for pianoforte in E flat (Op. 7); Trio for pianoforte and strings in B flat (Op. 11); *Sonate Pathétique*; First Concerto for pianoforte and orchestra in C (Op. 15); *Adelaide* (composed 1797); also the famous Septuor (Op. 20) and the first Symphony (Op. 21) (the last two works pub. in 1800). His second period, which included his *Sinfonia Eroica*, *Fidelio* (including the *Leonora* overtures), the overtures to *Prometheus*, *Coriolanus*, and *King Stephen*, the *Egmont* music, and the *Appassionata*, with other sonatas, merged imperceptibly into that of his latter years (about 1816 onwards), which in grandeur of construction and polyphonic effect transcended anything previously achieved. To this period belong the enormous pianoforte Sonata in B flat (Op. 106), Overture in C (Op. 124), and other works of great beauty and force, including the choral Symphony (or ninth Symphony), the *Missa Solemnis*, the marvellous Quartets for strings (Opp. 127, 130, 132, 135), the 33 Variations on a Valse by Diabelli (Op. 120), and the Mass in D. The influence of B. on the form and growth of musical art has been immeasurable. There is a copious literature on B. The following are among the more recently pub. works: F. J. Crowest, *Beethoven*, 1911; J. G. Prod'homme, *La Jeunesse de Beethoven, 1770-80*, 1921;

A. W. Thayer, *The Life of Ludwig van Beethoven* (3 vols.) (New York), 1921; A. Leitzman, *Ludwig van Beethoven* (companions, letters, and personal characteristics) (2 vols.) (Leipzig), 1921; W. Nohl, *Ludwig van Beethoven als Mensch und Musiker in täglichen Leben* (Stuttgart), 1922; M. Grusemann, *Beethoven* (Munich), 1923; A. Albertini, *Beethoven*, 1924; P. Bekker, *Beethoven*, 1925; L. Schieder-mann, *Der junge Beethoven* (Leipzig), 1925; W. J. Turner, *Beethoven*, 1927; E. Newman, *The Unconscious Beethoven*, 1927; A. Hévosy, *Beethoven the Man*, 1927; R. Specht, *Beethoven as he lived* (trans.), 1933; W. J. Turner, *Beethoven: the search for reality*, 1933; Marion M. Scott, *Beethoven* (Master Musicians series), 1934; E. Closson, *The Fleming in Beethoven* (trans.), 1936; Edouard Herriot, *The Life and Times of Beethoven* (trans.) (New York), 1936; Walter Riezler, *Beethoven* (trans.), 1938; L. Schrade, *Beethoven in France*, 1942; E. Ludwig, *Beethoven: Life of a Conqueror* (trans.), 1945. See also G. Grove, *Beethoven and his Nine Symphonies*, 1903; T. Helm, *Beethovens Streichquartette* (Leipzig), 1921; C. E. Lowe, *Beethoven's Pianoforte Sonatas* (hints on rendering and form), 1921; E. Evans, *Beethoven's Nine Symphonies described and analysed* (2 vols.), 1923; Eric Blom, *Beethoven's Pianoforte Sonatas discussed*, 1938; and D. F. Tovey, *Beethoven* (musical exercises), 1944.

Beetle, Colorado, see COLORADO.

Beetle, common name for an order of insects, the scientific name of which is Coleoptera (*q.v.*), possessing hard and horny fore-wings. The word B. is also loosely applied to cockroaches (*q.v.*) of the *Blattidae* family of orthopterous insects.

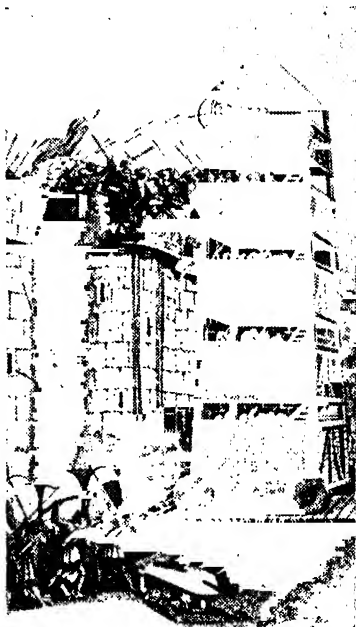
Beetling, process designed for the finishing of linen and cotton goods in which a beetling machine hammers down the cloth by means of wooden stamps which rise in succession and fall by their own weight. This flattens the surface of the cloth and gives it a hard appearance.

Beets, Nicolaas (1814-1903), Dutch poet and author, b. at Haarlem. He was prof. of theology at the univ. of Utrecht, 1875-84. He is remembered chiefly for his stories of Dutch life. His *Camera Obscura* (1st ed., 1839, under the pseudonym Hildebrand) has been trans. into many European languages. The continuation, *Na Vijftig Jaar*, appeared in 1887. He also wrote critical and theological essays, of which *Stichtelijke Uren* may be mentioned. His poetry was pub. in 4 vols. (1873-81). See *Nicolas Beets et la littérature hollandaise*, by J. J. Duproix, 1907.

B.E.F., see BRITISH EXPEDITIONARY FORCE.

Befana (corruption of Epiphany), name of a legendary old woman who, being busy sweeping her house when the 3 wise men of the E. passed on their way to offer gifts to the Infant Christ, excused herself from going to the window on the ground that she would see them on their return. The wise men returned another way, and B. was punished by being obliged to wait

for them ever since. Her festival is held in Italy on Jan. 5, when her elligy is carried through the streets, amid great rejoicing. On Twelfth Night, 11. children hang up a stocking before the fire, and B. brings presents to good children, but to bad children ashes. The tradition appears to be confused, for although she is the counterpart of Santa Claus, her name is used, like that of a bogey, to frighten naughty children.



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BEFFROI OR BREACHING TOWER

Beffroi, Belfry, or Breaching Tower, movable tower used in medieval times during military sieges. It moved on wheels, was sev. stories high, and was usually covered with raw hides to protect the besiegers in the lower story from boiling oil and fire. An upper story held a hinged drawbridge, to be let down upon the city wall for the landing of the assailants. Such a tower is mentioned by Caesar and by Froissart. See also BELFRY.

Beg, or Bey (*cf.* Persian *baig*), Moslem title given to the administrator of a dist. or tn., now used more generally as an honorific title applied to officers and men of good family, throughout Turkey and Syria. In Tunis Bey has come to be used as the hereditary title of the reigning sovereign.

Begarelli, Antonio (c. 1479-1505), It. modeller in terra-cotta, b. at Modena. He was the friend of Correggio. There are few of the works of B. left; the prin. are the 'Descent from the Cross,' and a 'Pieta' at Modena, containing many figures in the round rather larger than life.

Begas, Karl (1794-1854), Ger. painter, b. at Heinsberg; was court painter to the king of Prussia and prof. in the Academy of Arts, Berlin.

Begas, Reinhold (1831-1911), Ger. sculptor, son of Karl Begas, b. at Berlin July 15, and studied there and in Rome. In 1866 he returned to Berlin, where he spent the rest of his life. He executed statues and architectural designs for public places, as well as numerous portrait busts. Among his best-known works are statues of Schiller, 1863; Humboldt, 1882; Bismarck, 1901; the sarcophagus of Friederick III. in the mausoleum of the Friederickskirche at Potsdam; the statue of Borussia for the Hall of Glory and the national monument to the Emperor William, both in Berlin; and the Neptune bronze fountain in the Schlossplatz, Berlin.

Begg, Alexander (1840-97), Canadian writer, b. in Quebec. He took part in the N.W. rebellion against Riel. Author of *The History of the North-West*, 1891; *The History of British Columbia*, 1895; and, in collaboration with W. R. Nursey, *Ten Years in Winnipeg; a Narration of the Principal Events in the History of the City from 1870 to 1879 inclusive*, 1879.

Begg, James (1808-83), Scottish Free Church leader, b. at New Monkland, Lanarkshire; educated at Glasgow Univ. He was strongly opposed to anything savouring of liberalism in theology and church practice—particularly the projected union with the United Presbyterian Church. *See* life by T. Smith (1885-88).

Begger, word of uncertain origin, used in speaking of a person who asks alms, usually habitually, and who generally lives on the money and goods which he thus receives. *See* MENDICANCY, POOR LAWS, VAGRANTS.

Beggar-my-neighbour, game of cards, played by 2 or more persons. The players, holding their cards with backs upward, play down a card alternately, until one player turns up a court card, when his neighbour must pay him 4 cards for an ace, 3 for a king, 2 for a queen, and 1 for a knave, and in addition he wins the cards already thrown on the table and places them all under those in his hand. At last one player obtains all the cards in the pack and wins the game.

Beggars, The, *see* GUEUX, LES.

Beghards, association of men formed during the early part of the thirteenth century in the Low Countries, corresponding to and probably in imitation of the female Beguines (q.v.). Many vagabonds and mendicants adopted the title who did not belong to the brotherhood. They were denounced by the pope and councils, and suffered persecution from the Inquisition. Their communities had

almost disappeared by the end of the fourteenth century.

Begharmi, *see* BAGIRMI.

Bégin, Louis Nazaire, Cardinal (1840-1925), Canadian archbishop, b. at Point Lévis, Jan. 10. He was educated at the Little Seminary of Quebec; and at the Laval Univ., where he was awarded the Prince of Wales's gold medal in 1862, being the first to receive this prize. He was ordained in 1865 at Rome, where he remained to make a special study of eccles. hist. and oriental languages, 1866-67. He was prin. of the Laval Normal School, Quebec, 1885-88; bishop of Chicoutimi, 1888-91; coadjutor to Cardinal Taschereau, 1891-98; and archbishop of Quebec from 1898. Author of *La Primauté et l'infaillibilité des souverains pontifes*, 1873; *Le Culte catholique*, 1873; *La Sainte Écriture et la règle de foi*, 1874; *Aide-mémoire ou chronologie de l'histoire du Canada*, 1886; *Catholicisme de controverse*, 1902. He was made cardinal May 25, 1914.

Beglerbeg, or **Beylerbey**, Turkish word which signifies bey of beys; applied to the governor-general of a prov. who had under him sev. beys, and was second in rank to the grand vizier. The external distinctions were 3 ensigns consisting of staves trimmed with the tail of a horse.

Béglos, tn. in the dept. Gironde, France, on the R. Garonne, 3 m. S.E. of Bordeaux. Pop. 21,500.

Begoniaceæ, order of tropical dicotyledonous plants, comprising 4 genera, of which *Begonia* is the chief. All the species of begonia have fleshy leaves, often richly coloured with crimson, succulent stems, and pink flowers growing in panicles; the leaves are root-leaves, and have one side larger than the other—hence the name of elephant's ear sometimes given to the plant.

Beguines, order of sisters belonging to the Rom. Catholic Church, traditionally founded by St. Begga in 698, but, as now accepted, by a priest, Le Béguin, in the twelfth century. They were first known in Holland and Germany. They took no vows, and they lived in close proximity in separate houses called *beguinages*. Their houses often received large donations, which were devoted to charitable purposes. A hospital adjoined each institution, and frequently a church also. The sisters lived in purity and poverty, giving their services in nursing, and tending the aged as well as educating the children. The sisterhood is still in existence in the Rom. Catholic Church. The most famous of the institutions is at Ghent, under the name of St. Elizabeth's Beguinages.

Begum (Hindustani *begam*, fem., from Turkish *beg*, lord), name given to sultanas and to any Moslem lady of high rank.

Behaim, Behem, or Boenheim, Martin (c. 1459-1506), Ger. cosmographer, b. at Nuremberg. He studied under Regiomontanus (Johann Müller). In 1484 he accompanied the fleet of the Portuguese Diogo Cão on a journey of discovery along the Congo coast, W. Africa. In 1486 he

visited Fayal, in the Azores, returning to Nuremberg in 1490. He acquired fame for his methods of finding the lat. at sea by means of astronomical observation, for his maps, and for the globe which he bequeathed to his native city. See E. G. Ravenstein, *Behaim: his Life and his Globe*, 1909.

Behar, see BIHAR.

Behaviourism, name given to the teaching in a primarily Amer. school of psychology which originated in the early years of the twentieth century. The name arose from the study of the behaviour of animals, but it was not till the results of these studies had been applied to human psychology that the teaching was so designated. The best-known exponent of B. is Dr. J. B. Watson, and it was his 2 monographs, *Psychology as the Behaviourist Views it*, and *Image and Affection in Behaviour*, both pub. in 1913, and his book, *Behaviourism: an Introduction to Comparative Psychology* (1914), that first crystallised the doctrines of B. It was Watson who first applied to man the studies on the behaviour of infra-human mammals. The school of animal psychology was also for the most part an Amer. school, a prominent leader in it being E. L. Thorndike, but a Brit. psychologist, C. Lloyd Morgan, influenced the former's experiments. In 2 books, *Introduction to Comparative Psychology*, 1894, and *Animal Behaviour*, 1900, Lloyd Morgan abandoned the traditional way of regarding the actions of animals as if they reasoned like men, or, in other words, the anthropomorphic interpretation of animal acts. The 'trial and error' way of animal learning was emphasised by Morgan, and confirmed by Thorndike. Finally, the essential similarity of human and animal learning forced itself upon all these experimenters. Mention may also be made of the work of the Russian, Pavlov, and his students, on the 'conditioned reflex,' i.e. the automatic response made to a stimulus.

It will be seen from the foregoing remarks that these studies led to the fundamental Behaviourist view that man has no mental processes different from those of animals; and that there is no room for what is generally known as free will.

Naturally so far-reaching a repudiation of any entity like mind, or soul, has aroused criticism, especially from the subjective, or introspective, psychologists. The Behaviourist believes that if it is possible to amass observations upon human behaviour in any particular case the response to it can be predicted or, reversing the observations, we can deduce from the response what were the conditions calling it forth. See *Behaviourism*, 1925, by J. B. Watson; *Why we behave like Human Beings*, 1925, by G. A. Dorsey; and *A Theoretic Basis of Human Behaviour*, 1925, by A. P. Weiss. Bertrand Russell's *Analysis of Mind*, 1927, may be read for the case of the subjective philosopher against B.

Behbahan, see BAHABAN.

Behheading, see DECAPITATION.

Behem, Martin, see BEHAIM.

Behemoth (Heb., large beast) is a large herbivorous animal mentioned in Job xl. 15-34. It is supposed by many interpreters to mean the hippopotamus.

Behera, or Beheira, prov. of Egypt, forming part of the delta of the Nile, W. of the Rosetta branch of the riv. The chief tn. of the dist. is Damanhur (pop. 48,000), where the railway from Cairo bifurcates for Alexandria and Rosetta. Pop. 890,000.

Behistun, or Bisitun, rocky mt. side in Ardekan, Persia, 22 m. E. of Kermanshah. It rises to a height of 1700 ft., and bears an inscription, at a height of 300 ft., in cuneiform writing in 3 languages, Persian, Susian or Elamitic, and Babylonian, besides some minor records in Arabic and Gk. The main inscription, first deciphered and trans. by Sir Henry Rawlinson (1835-45), relates the exploits of Darius the Great (d. 485 B.C.), and forms the key to Assyrian antiquities.

Behm, Ernst (1830-84), Ger. geographer and statistician, b. at Gotha. He was the founder of *Geographisches Jahrbuch*, and ed. it 1866-84; also editor of *Petermanns Mitteilungen*, 1878-84. With Hermann Wagner he compiled *Bevölkerung der Erde*, 7 vols., 1872-82.

Behmen, Jakob, see ROEHME, JAKOB.

Behn, Aphra (1640-89), Eng. novelist and dramatist; b. at Wye, the daughter of John Johnson, and as a child went to Surinam, S. America. She married a Dutch merchant, B., on returning to England, and later, was employed on a diplomatic service in Flanders by the king. When left a widow she supported herself by her pen. Her works suffer from coarseness, but show considerable ability. Her best drama is *The Rovers* and her most famous novel *Oroonoko*. Her *Works* (6 vols.) appeared in 1871; also ed. by M. Summers in 1915. See V. Sackville West, *Aphra Behn*, 1927; G. Woodcock, *The Incomparable Aphra*, 1948.

Behring, Emil von (1854-1917), Ger. bacteriologist, whose name is associated with antitoxic methods of preventive medicine. He estab. the possibility of securing immunity from tetanus by the use of a serum from an infected animal and, in the same way, he used a culture of the diphtheria bacillus to secure immunity from diphtheria. But he was not successful with his remedy for tuberculosis. Works include *Theory of Blood Therapy*, 1892; *Etiology of Tetanus*, 1904.

Behring, Vitus, see BERING.

Behring Island, Behring Sea and Strait, Behring Sea Question, see BERING.

Behut, name sometimes given to the R. Jhelum (q.v.).

Beibars, Baybars, or Bibars, 2 Egyptian rulers: (1) Beibars I. (1269-77), sultan of the Mamelukes. He fought against the Christians and the Mongols. He defeated the crusaders under Louis IX. of France, captured Antioch in 1268, and ravaged the country round Mecca in 1269. In that year he murdered his master, the Egyptian sultan Kotuz, and became sultan in his place. He subdued the Armenians, and at one time almost extirpated the Syrian Assassins. The

mosque at Cairo which bears his name was erected by him. (2) Beibars (Jashengir) II. (1309-10) was a Circassian by birth. He was made ruler of Egypt by the Bahri Mamelukes, but was assassinated by a rival within a year.

Beijerland, or **Bayerland**, name of 3 coms. of Holland known as Oud, Nieuw, and Zuid respectively, situated on the is. of Hoekschevaard. Total pop. 10,000.

Beilan, tn. in the N. of Syria, not far from Alexandretta, used as a summer resort. The B. Pass is 1800 ft. high, and lies between the mt. ranges of Amanus and Rhossus. It is supposed to be the anct. Pylæ Syriæ (Syrian gates) probably used by Alexander the Great and by the crusaders. The tn. is the site of the battle fought in 1832 between the Turks and the Egyptians. Pop. 5000.

Beilby, Sir George (1854-1924), Scottish scientist. Educated privately and at Edinburgh Univ. His researches in low-temperature carbonisation of coal were of service to the nation. During the First World War, when the conservation of oil for the Navy became an anxious problem, the distillation of bituminous coal at low temperatures provided a way of obtaining fuel oil from home sources. The Fuel Research Board, of which B. became chairman, was set up in 1917. B. then set up the Fuel Research station at Greenwich for inquiring into the systematic survey and classification of Brit. coals and the treatment of coal by carbonisation and gasification so as to make the best use of its by-products. Another service B. rendered to the country was the institution of the therm system of charging for a tn.'s gas, whereby the consumer pays not for vol. irrespective of quality but for calorific power. He pub. a number of papers on the physical properties of solids and summarised these in *Aggregation and Flow of Solids*, 1921, which book won him the fellowship of the Royal Society.

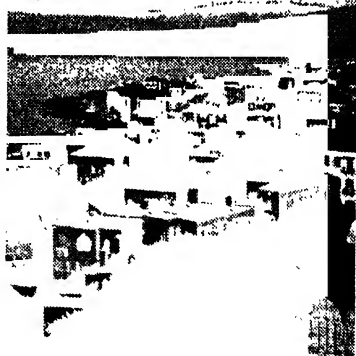
Beilstein, Friedrich Konrad (1838-1907), Russian chemist, b. at St. Petersburg in 1838. In 1866 he was made prof. of chemistry at the St. Petersburg Technological Institute, from which position he retired in 1896. His publications are numerous.

Beira: (1) Portuguese prov. reaching from the Atlantic to the Sp. frontier, now consisting of the 5 dists. of Aveiro, Castelo Branco, Coimbra, Guarda, and Viseu. It is bounded by the R. Douro in the N. and by the Tagus and the Estremadura Range in the S. It has an area of 9256 sq. m. It is mountainous but well watered, and there are many mineral springs. The productions are olives and wine. There are 7 cities in the prov. and 238 other tns. Pop. 1,730,000. (2) The chief tn. of the B. dist., Portuguese E. Africa, a seaport at the mouth of the R. Pungwe. It is connected by a line 200 m. in length with the Rhodesian railway system, and is the outlet for the copper of Katanga (Belgian Congo) and the gold of Rhodesia. Transit traffic through the port to and from N. and S. Rhodesia, Nyasaland, and the Belgian Congo was valued at

£9,775,949 in 1925. Pop. 23,000, of whom 1900 are Europeans.

Beiram, see **BAIRAM**.

Beirut, **Bairout**, or **Beyrout**, tn. and prin. seaport of Syria, 55 m. W.N.W. of Damascus on a bay of the Mediterranean. Pop. 160,000. The walls are 3 m. in circumference, and the suburbs beyond the walls are greater than the enclosed tn. Forming the seaport of Damascus, B. is a progressive commercial centre. The harbour will only admit small ships, but larger ones may anchor at a distance of half a mile from the shore. In bad weather shelter being found in the bay



American Colony, Jerusalem

BEIRUT

of the riv. of B., about 3 m. distant from the tn. It is clean, plentifully supplied with springs, and contains large bazaars, an Amer. and a Fr. college, the palaces of a Gk. and a Maronite bishop, and many missions and other institutions. There is a good service of European steamers. The prin. exports are silk goods and wool, oils, oranges, and other fruits. Silk is produced in large quantities, and there are important manufs. of silk goods and gold and silver thread. A road and railway connect with Damascus, crossing the Lebanon. B. was bombarded in Feb. 1912, during the Italo-Turkish war. In the First World War it was occupied by General Allenby's victorious army on Oct. 8, 1918. In the Second World War it was bombed by Brit. planes on June 4, 1941, during the short period of hostilities between the allied forces and the Fr. troops in Syria under the orders of the Vichy Gov.

Beisan (Bethshan in the O.T., Seythopolis in the N.T., and Bessan in the crusades), tn. in Palestine in a prov. of the same name, at S.E. end of plain of Esdraelon. During the First World War B. was captured from Turks by General Allenby, Sept. 20, 1918. Was scene of Arab disturbances in Apr. 1920, and again in Aug.-Sept. 1929 during the Zionist-Arab trouble over the Walling Wall (q.v.). Recent excavations by the Museum of Pennsylvania Univ. have produced a complete hist. of the site from about the sixteenth century B.C. The earliest city level reached was that of Thothmes III., but older levels have been cleared. Among the relics unearthed were a Canaanite temple, dedicated to 'Mekal, the lord of Beth-shan,' and a basalt tablet showing a lion and a dog representing respectively Nergal, the god of death and the guardian of the temple. Other temples found point to B. as a centre of serpent cult in some form and suggest that the anc. name, Beth-shan, was derived from Shakhnan, the name of an early Mesopotamian serpent deity. Other finds of archaeological value, as representing types unknown elsewhere in Palestine, include a large Græco-Rom. temple, various stelæ of Canaanite and Egyptian kings and a circular Byzantine church. Some of these finds are now lodged in the Jerusalem museum.

Beisehir Göl, fresh-water lake in Karaman prov., Asiatic Turkey, 35 m. long N.W. to S.E., and 1 m. wide, draining into the Soghla Göl. The tn. of B. is on the E. shore of the lake.

Beiseyhir, or **Beg Shehr**, tn. of Asiatic Turkey, 40 m. W.S.W. of Konya.

Bei-Shehr, see **BEG-SHEHR**.

Beit (Heb. *beth*), Arabic word which properly signifies a tent or hut, but is also used to denote any edifice or abode of men. It is often found as a component part of proper names, e.g. Beit-al-harâm, i.e. the sacred edifice, or the edifice of the sanctuary, a designation frequently given to the temple of Mecca.

Beit, Alfred (1853-1906), S. African financier and philanthropist, b. at Hamburg. He was a close friend of Cecil Rhodes, and assisted him in the amalgamation of the Kimberley mines into the De Beer's Consolidated Mines. After 1888 he was engaged in developing the Transvaal gold mines, and in 1889 became a director of the Brit. S. Africa Co. for the administration of Rhodesia. In 1905 he founded professorships at Oxford in colonial hist., and left large sums to various charities.

Beit, Otto (1865-1930), S. African philanthropist, brother of Alfred B., b. in Hamburg. In 1898 he settled in England as a stockbroker. He was much interested in the problem of developing S. Africa by land settlement schemes and in order to remain in close touch with that country, he accepted a post as director of the Brit. S. Africa Company. He contributed large sums for public purposes, including the provision of children's sanatoria, libraries, and an institution for homœopathic research.

Beit-el-Fakih, fort. tn. in the vilayet of Hodeida (formerly Yemen), Asiatic Turkey, near the Red Sea. A trading centre for coffee. Pop. 8000.

Beit, Jibrin (Rom. Eleutheropolis and the Gibelin of crusading times), vil. of Palestine, W. of Hebron, and included in the sub-dist. of Hebron. It is of archaeological interest. The churches of Sandahanna in the vicinity furnish examples of Rom. technique applied to Christian buildings. In 1921 a fine Rom. mosaic of the third century A.D. was excavated. The Israelitish tn. of Maresah (Gk. Marissa) nearby has also recently been excavated. Among the most striking finds are painted tombs of the Heb. period, wall paintings, rock caverns, etc. A second-century tomb, that of Apollonophanes, with gabled roofs is said to be the only one of its kind found in Palestine. *Consul Linke, Handbook of Palestine, 1930.*

Beit Lahm, see **BETHLEHEM**.

Beith, John Hay (b. 1876), Eng. author; pseudonym, 'Ian Hay.' His earlier books, *The First Hundred Thousand* and *Carrying On*, on the First World War, attracted attention. They caught much of what was best in the spirit of 1914 and, conveyed a graphic and sympathetic account of life in the New Armies. He has also written comedies of a light order, such as *Tilly of Bloomsbury*, 1919, and *A Safety Match*, 1921, in which he happily reflects the gaucheries of hobbledchoy schoolchildren. He was public relations officer to the War Office (1939-41). Later books include *The Great Wall of India*, 1933; *David and Destiny*, 1934; *Housemaster*, 1936; *The King's Service*, 1938; *Stand at Ease*, 1940; *Little Ladyship*, 1941 (also dramatised); *America Comes Across*, 1942.

Boith, mrkt. tn. in N. Ayrshire, Scotland, 11 m. S.W. of Paisley, with 2 railway stations. Coal and fireclay are found in the neighbourhood. There are manufs. of linen, thread, rope-making, cabinet-making, and upholstery. Pop. 5000.

Beja, the cap. of the dist. B., Portugal, about 90 m. from Lisbon. There are remains of Rom. walls and a gateway. Its manufs. are leather and pottery, and it trades in olive oil. It has a noted cathedral and castle. Pop. 12,000.

Beja, or **Boja** (Bisharin), African people N. of Abyssinia, between the Nile and the Red Sea, widely spread in Nubia. They are probably Hamitic, and include the Ahabda, Hadendoa, Bisharin, and other tribes. They are Muslims. They represent the Blemmyes of Strabo.

Bejan, or **Bajan** (medieval Lat. *bejanus*, Fr. *bec jaune*, yellow beak, i.e. fledgling), name applied to freshmen in the univs. of the Middle Ages, still surviving in St. Andrews and Aberdeen. Bejanian, or payment for students entering the univ., was part of an opening ceremony which led to horse-play and rowdiness.

Bejapoor, see **BIJAPUR**.

Béjar, a fort. tn. in the prov. of Salamanca, Spain, on the R. Cuerpo de Hombro, 3165 ft. above the sea-level. It is surrounded by old walls; within it the

ducal family of the same name has its ancestral palace, and there are many interesting churches, notably Santa Maria, San Juan, and El Salvador. There are sulphur springs, 108° F., in the neighbourhood. Pop. 10,000.

Bek, Antony (d. 1310), Eng. prelate, created bishop of Durham in 1283 by Edward I. He was renowned for his magnificent retinue. He was one of the royal commissioners to negotiate a marriage between the king's son, Edward, and Margaret, infant queen of Scotland, 1290. In 1294 he was sent on an embassy to arrange an alliance with Germany against France. In 1296 he took part in Edward I.'s expedition against Scotland, and received Baliol's submission in the castle of Brechin. After his return from the battle of Falkirk he appears to have lost Edward's favour. In 1302 B. set out to Rome to place an appeal against Prior Richard without asking the king's leave; in consequence the temporalities of his see were confiscated, but he afterwards regained them. Clement V. made him patriarch of Jerusalem in 1305, and 2 years later Edward II. granted him the sovereignty of the Isle of Man. He d. at Eltham, and was buried in Durham Cathedral. See Robert de Graystones, *De Statu Ecclesiæ Dunelmensis*, ed. by Raine, 1839; J. L. Low, *Diocesan History of Durham*, 1880.

Bek, Thomas (d. 1293), Eng. prelate, brother of Antony B. (q.v.). In 1269 he became chancellor of Oxford Univ.; keeper of the wardrobe to Edward I., 1274; keeper of the great seal during Edward's absence in France, 1279; bishop of St. Davids, 1280. He founded the collegiate church of Llangadoc and Llandewi-Breth, and a hospital at Llawhaden. In 1290 he took a vow to take the cross, and set out for Palestine, but it is uncertain whether he actually left England.

Beka'a, El, or Elbika, see CÆLE-SYRIA.

Beke, Charles Tiltone (1800-74), Eng. explorer, b. at Steyne. He joined an expedition to Abyssinia in 1840, and pub. the result of his travels in *Abyssinia: a Statement of Facts* (2nd ed., 1846), and *On the Sources of the Nile*, 1849. In 1861 he visited Harar, and 4 years later he set out to Abyssinia to urge the release of certain Brit. captives, but was unsuccessful.

Békes, tn. of Hungary, at the junction of the White and Black Koros, noted for its agriculture, and specially the cultivation of flax. It trades in cattle and honey. Pop. 30,000.

Bekker, August Immanuel (1785-1871), Ger. classical scholar and philologist, b. at Berlin, where he held the chair of philology, 1811-71. He revised the texts of many of the classics from the MSS. in the large libraries of Europe, independently of other printed eds. He ed. 25 vols. of the *Corpus Scriptorum Historiæ Byzantinæ*, and *Anecdota Græca*, 3 vols., 1814-21.

Bekker, Balthazar (1634-98), Dutch Protestant theologian, b. in Friesland; educated at Groningen and Franeker; pastor at Franeker, and after 1679 at Amsterdam. His *De Philosophia cartesi-*

siana aëmonitio sincera, 1665, was written to demonstrate a relationship between Descartes' philosophy and theology. His most famous work, *Die Belooferde Wereld, or The World Bewitched*, 1691, expresses a disbelief in sorcery, magic, and even the existence of the devil. The book is an early critical study of comparative theology. On its publication B. was removed from the ministry.

Bekker, Elisabeth (1738-1804), Dutch poetess and novelist, was the wife of Adrian Wolff. She resided in France for some time with Agatha Beken, and it was in conjunction with this friend that she wrote her novels, sentimental works in the style of Richardson. Perhaps her most popular works were: *Historie van den Heer Willem Leerd, 1785; Historie van Mejnrouwe Sara Burgerhart, 1782; Abraham Blankaart, 1787; Cornelia Wildschut, 1793-96.*

Bektashi, a name applied to a class of dervishes (q.v.), estab. in 1357 by Hadji Beyktash or Bektasch. When called upon by Amurath I. to bless his soldiers he gave them the name of *yentishery*, i.e. new soldiers, which is the origin of the word janizary.

Bel, or Belus, deity of the Babylonians and Assyrians, known to the Heb. as Baal, the name signifying lords in both languages. B. corresponds to the Gk. Zeus and the Rom. Jupiter.

Bel, Joseph Achille Le, see LE BEL.

Béla, name of 4 kings of Hungary in the Arpad dynasty. B. I., 1061-63, who succeeded his brother Andrew, improved the commerce of Hungary by standardising weights, measures, and coinage, pacified the country, estab. Christianity, and introduced the representative system into the diet. B. II., known as the Blind, 1131-41, succeeded his second cousin, Stephen II., and was the son of the pretender Almus. The kingdom was administered by his wife, Helena of Siberia, at whose instigation the ministers of the preceding king were massacred at the diet of Arad. B. III., 1173-96, was grandson of B. II., and succeeded Stephen III. He had been educated at Constantinople, and introduced Byzantine customs into Hungary. B. IV., 1235-70, grandson of B. III., deposed and succeeded his father Andrew II. He was a supporter of the freemen against the nobles, whose power he attempted to break. In 1241 Hungary was overrun by Mongols, and, asking aid of Frederick of Austria, B. was compelled to yield some of his ter. to him. Later he vanquished both the Mongols and Frederick.

Belacazar, tn. of Andalusia, Spain, 50 m. N.W. of Cordova. Manufs. woollens. Pop. 7500.

Bel and the Dragon, The Story of, apocryphal addition to the book of Daniel in the Bible, forming 2 distinct and separate stories. The original text is considered to be either Gk. or Aramaic. The stories are variously received; by the Rom. Catholic Church as true, forming the fourteenth chapter of Daniel in the Vulgate; but they are generally accepted as

fables, written to impress the instability of idol worship.

Coming to us from different sources the writings vary greatly in detail, but the stories may be given in brief, as:

Bel. Daniel declines to worship an image of Bel (Baal), and when the king of Babylon points out how great a quantity of food the image consumes each day, Daniel has all the entrances to the temple closed, first sprinkling the floor with fine ashes. In the morning footprints show that the food has been removed by the priests through a secret door. Whereupon the king has the image destroyed and the priests put to death.

Dragon. Daniel refuses to worship a dragon, which he kills by throwing a ball of pitch down its throat. Yielding to the angry people, the king has Daniel cast into a den of lions, where for 6 or 7 days Daniel lives unharmed. On discovering this the king has Daniel's accusers thrown in and devoured, while Daniel is released.

Bela Kun, see KUN.

Belasco, David (1853-1931), Amer. dramatist, b. in San Francisco, eldest child of Humphrey Abraham B., an Eng. Jew. He appeared at the Metropolitan Theatre, San Francisco, in 1874 as the young duke of York in *Richard the Third*. Later he was stage manager of the Madison Square Theatre in New York, but he is best known for his original plays. These include *Hearts of Oak*, 1880; *La Belle Russe*, 1882; *May Blossom*, 1884; *Valerie*, 1886. After these came 4 plays in collaboration with H. D. de Mille, including *The Wife*, 1887; *Lord Chumley*, 1888. Then, among others: *Madame Butterfly*, of which the plot was taken from John Luther Long's novel, 1900; *Du Barry*, 1901; *The Darling of the Gods* (with J. Luther Long), 1902; *The Girl of the Golden West*, 1905; He opened the Belasco Theatre, formerly the Republic, in Sept. 1902; but in 1917 it had its old name restored, and the name Belasco was given to the Stuyvesant Theatre on 44th Street.

Belcher, Sir Edward (1799-1877), Eng. admiral. He was present at the bombardment of Algiers in 1816, and took part in the 1825 expedition to explore the Bering Strait. He took part in the war in China, 1840-41, and in 1852 was given command of the unsuccessful expedition to search for Sir John Franklin.

Belcher, George Frederick Arthur (1875-1947), Eng. artist, son of a doctor of medicine. Educated at King Edward VI. school; went to Gloucester school of art. Made a reputation as a painter of still life and *genre* and as a humorous draughtsman. It is for his studies of London life that he will be chiefly remembered, his humorous drawings being a familiar feature of *Punch*, the *Tatler*, and other periodicals. His favourite characters, generally drawn with an element of caricature, were charwomen, public-house loafers, and the like, whose sharp Cockneyisms supplied the aptest captions while really reflecting these strata of London life. But apart from low-life *genre* subjects B. also produced serious

figure drawings such as his etchings of James de Rothschild and Sir Frederick Ponsonby with backgrounds illustrative of their activities. In oils B.'s interests were also chiefly in low-life character portraiture. A.R.A., 1931; R.A., 1945.

Belcher, James (1781-1811), Eng. prize-fighter, b. in Bristol. He was put to the trade of a butcher, but his local success as a pugilist soon induced him to follow that career in London. In 1803 he lost an eye while playing racquets. He was defeated by H. Pearce in 1805 and in 1807 by Tom Cribb. Soon after this he became a publican in Soho, where he d.

Belcher, Jonathan (1681-1757), Amer. administrator, b. at Cambridge, Massachusetts, and graduated at Harvard, 1699. In 1730 he was appointed governor of Massachusetts and New Hampshire: his freedom of thought made him many enemies, who went so far as to forge letters to encompass his ruin: the influential people of New Hampshire, who wanted a separate gov., were opposed to him, and he was superseded in 1741. In 1747 he was appointed governor of New Jersey, an office he held till his death.

Belcher, John (1841-1913), Eng. architect, b. and d. in London. Son of an architect. His work, which was influenced by that of Scott and Street, began during the last stages of the Gothic revival, but most of the buildings designed by him show small traces of that revival. Earlier examples are the Curriers' Hall, London Wall, and the Catholic Apostolic church, Camberwell; later are the Colchester tn. hall, the premises of the Institute of Chartered Accountants in Moorgate Street; Whiteley's premises in Bayswater, and the offices of the Royal Insurance Company, St. James Street. He was one of the first notable modern architects to call in the aid of sculptors for the decoration of public buildings. With M. Macartney he produced an excellent folio work on the Eng. Renaissance. President of the Institute of Brit. Architects, 1904-6; gold medallist, 1907; R.A. 1909.

Beled, or Balad, Arabic word, signifying a tn., prov., or country, occurring in many E. geographical names, e.g. Beledulgerid—Baladal-Jarid, or the country of palm-trees.

Beledugu, or Beledougou, region of Fr. W. Africa, lying to the N. of the R. Niger, between 7½° and 8½° W. long.

Belem (shortened from Bethlehem), tn. in Portugal, situated near the entrance to the R. Tagus. It is a suburb of Lisbon. Its Gothic monastery and church, the finest structure in Lisbon, was built to commemorate Vasco da Gama's discovery of the sea route to India. In the church of B. are the tombs of both da Gama and Camoens. Pop. 10,000.

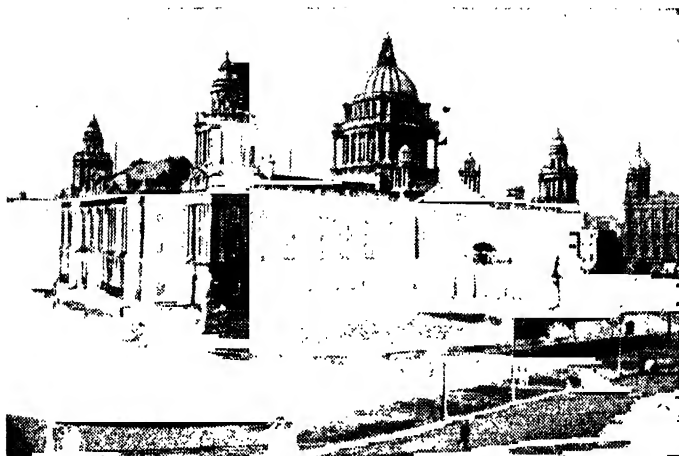
Belem, or Pará, cap. of the prov. of Pará (q.v.), Brazil. Situated with a good harbour in the estuary of the Tocantins on Para R. It was founded in 1616 to secure the Amazon against the Eng., Dutch, and Fr. The modern city contains many fine buildings, including a

cathedral, bishop's palace, and gov. house. Pop. 309,000.

Belemnites, genus of fossil dibranchiate molluscs representing the family Belemnitidae, allied to the Sepiidae, or cuttle-fish family. These fossils, which occur abundantly from the Lias to the Cretaceous, are the internal shell of the animal's body. From a few well-preserved specimens it has been seen that they had 10 arms provided with hooks, and in some cases an ink-bag has been discovered. The size of the B. seems to have varied from a few inches to sev. feet.

Belfast, city, co., and parl. bor., cap. of N. Ireland. Pop. 440,000. It is 112 m.

and the Presbyterians. The surrounding country is well wooded and picturesque, many country seats and villas lying in the neighbourhood. B. Lough is very pretty, and round its shores have sprung up many residences, forming the vills. of Whitehouse, White Abbey, Holywood, and Bangor. Early remains are found in the chalk beds at Cave Hill, the scene of a battle between the Irish and savages of the Ards, 1408. The harbour of B. is under the management of a board of harbour commissioners, elected by the ratepayers and shipowners. The ship-building trade was begun in 1791; in 1860 it gave employment to some 100 men;



British Railways

CITY HALL, BELFAST

N. of Dublin by rail, and is a railway centre, three railways running through the city, via the Great N. of Ireland, the N. Cos., and the B. and Co. Down, B. being the terminus of each. Situated at the entrance of the R. Lagan into Belfast Lough, B. is a seaport of the first rank; regular passenger communication is maintained with Liverpool, Heysham, Glasgow, and Ardrossan. B. was at one time subject to epidemics, being built on alluvial deposit, but has been made more salubrious by careful drainage. Many fine buildings are to be seen in the city, including the public library, the city hall, built in 1906, and the post office. The old Queen's College was replaced by Queen's Univ. under Irish Univs. Act of 1909; there are also Presbyterian and Methodist colleges, Royal Academical Institute, and a municipal technical institute. There are sev. fine public parks. The older churches of the city are classical in design, the modern, Gothic. The 3 main religious bodies are the Protestant Episcopalians, the Rom. Catholics,

to-day some 25,000 men are employed. Aeroplane engines and wings are also made. An airport was estab. in 1937. The Alexandra Dock, which was opened in 1889, is now, with all its modern improvements, one of the most commodious harbours in the United Kingdom. One of the largest graving docks in the world was opened here in 1911. B. is also an important distributing port; it is the centre of the Irish linen industry, and the business headquarters of the flax spinning and weaving industry. In recent years nearly a million pounds worth of linen has been exported by the United Kingdom, most of it coming from B. Over 100,000 persons find employment in this industry. It has distilleries, and tobacco and rope works. The chief exports are linen, whisky, iron ore, aerated waters, and cattle. It was created a city in 1888, and in 1897 the title of lord mayor was conferred upon the mayor of the city. Before the Franchise Act of 1918, it sent 4 members to Parliament, the number was then increased to 9. Under the Gov. of

Ireland Act, 1920, it returns 16 members to the N. Irish Parliament, and 4 members to the House of Commons at Westminster.

The origin of the tn. and of its name are alike lost in obscurity. A castle is said to have been built by John de Courcy in 1177, and destroyed in 1316 by Edward Bruce. At the beginning of the sixteenth century B. was no more than a vil., owned by the O'Neill family, who were in opposition to the reigning monarch. In 1552 Hugh O'Neill swore allegiance to his king, and received the tn. and fortress of B. and the surrounding lands, but lost them in 1571 to Sir Thomas Smith, after whom Sir Arthur Chichester had them. B. received a charter in 1613, and under Wentworth's wise policy started on a career of prosperity and progress. The cotton manuf. was begun in 1777. There have been various riots in the city owing to the intensity of the religious opposition of the different sects, notably in 1880, 1884, and 1907. B. became the centre of resistance to Irish Home Rule. In 1912 there were many demonstrations and religious and political disturbances. The Ulster Volunteer Force was founded, and an Ulster provisional gov. set up in 1913. During July 1920, in the course of the Sinn Féin campaign, serious rioting occurred in B. When in the same year Ulster elected to remain within the United Kingdom, B. became the seat of gov. of N. Ireland. On July 18, 1945, the city was visited by the king and queen with Princess Elizabeth, and the king addressed the N. Ireland Parliament. During the Second World War B. suffered damage from air attack, having been bombed in Sept. 1940. See D. J. Owen, *History of Belfast*, 1921.

Belfast, city and seaport of Waldo co., Maine, U.S.A., on the W. side of Penobscot Bay, industries, shipbuilding and manufacturing. Pop. 5500.

Belfast Lough, inlet on the E. coast of N. Ireland, situated between the tns. of Antrim and Down. It is an estuary of the Lagan, and is 7 m. wide at its mouth. It extends 15 m. inland, and has the tns. of Belfast, Carrickfergus, Holywood, and Bangor on its shores.

Belfort, cap. of the ter. of the same name, in the dept. of Haut-Rhin, France. It stands on the R. Savoureuse, in the depression called the Trouée de B., between the Vosges and the Jura, 117 m. N.E. of Dijon. It was ceded to France by Austria at the peace of Westphalia in 1648, and fortified by Vauban. In the Franco-Ger. war of 1870-71 it withstood a siege of 3 months, capitulating with military honours on Feb. 16, 1871, and was restored to France at the peace of Frankfurt. The fortifications were then enormously strengthened.

During the early days of the First World War the Fr. garrison in B. attacked the Gers., who, by the middle of Aug. 1914 were compelled to withdraw beyond Mulhouse. The Fr. had to withdraw again to B. to conform to the general line further N. In Sept., 1914, the Fr. made another advance from B., and this time estab. themselves in Alsace. Throughout

the whole of the war the place remained the right-hand pivot of the allied line. It was again a centre of fighting in the Second World War, during the advance across Europe of the Amer. Seventh Army and the Fr. First Army in 1944. B. itself was liberated on Nov. 25, 1944. Pop. of tn., 42,500; of ter., 86,000.

Belfry, term originally applied to a tower used for purposes of defence, later a watch-tower, or one from which an



THE BELL-TOWER AT EVESHAM, WORCS.

alarm bell was rung, and finally a bell-tower, usually confined to eccles. buildings. It generally is part of the church, but is sometimes a separate building, as with the lt. campaniles. Such Bs. are found in England at Evesham, Berkeley, Beccles, and sev. places in Cornwall and Scotland, where the church stands in a glen, the B. then being placed on the hillside above it. Municipal Bs., attached to the tn. hall, are common on the Continent, as at St. Quentin, Douai, Brussels, etc., and are also found at Glasgow and Aberdeen. The famous B. at Bruges, with a carillon of 48 bells, is part of 'Les Halles.' The framework of a B. is made to rest either upon stone corbels or upon recesses in the wall, in order to mitigate the effect of the vibration upon the masonry. The higher the bells are hung the more this is felt. See also BEFRON.

Belga, the currency unit of Belgium, introduced in 1926 after the franc had been stabilised. It is equivalent to 5 paper francs, and at par 35 Bs. equal £1.

Belgæ, name given by Cæsar to the different tribes who inhabited the N. of Gaul, between the sea on the W., the rivs. Matrona (Marne) and Sequenna (Seine) on the S., and the Rhenus (Rhine) on the E. But it is not well determined how far this name may be extended to the E.; perhaps the Treviri, on the banks of the Moselle, were included. Cæsar also (*Bell. Gall.* v. 24) uses the term Belgium to express a part of Gallia Belgica, on both sides of the Somme, including the Bellovaci, Atrebatæ, and Ambiani. The B. were, according to Cæsar, of Ger. origin. The Bellovaci (Beauvais) were the most warlike and numerous Belgic tribe in the time of Cæsar (*Bell. Gall.* ii. 4). The rest of the tribes are mentioned by Cæsar (ii. 4); among them we find one name, the Atrebatæ, the same as that of a Belgic tribe in Britain. The B. may be described generally as occupying, in the time of Cæsar, the Fr. depts. of Nord, Pas-de-Calais, Somme, Seine-Inférieure, Oise, and Aisne, with a part of modern Belgium. When Cæsar invaded S. Britain he found that part of the is. occupied by B., that is, by tribes of Ger. origin (*Bell. Gall.* v. 12). The whole S. coast from Suffolk to Devonshire was probably occupied by Belgic tribes.

Belgard, tn. in the prov. of Pomerania, Germany, situated 16 m. S.W. of Köslin, on the Persante. There is an old castle, and horse and cattle m'rks. are held. Pop. 12,500.

Belgaum, or **Belgam**, dist. of Bombay, India. The tn. and cap. of the same name is situate 2500 ft. above sea level, and contains an old fort. The dist. is generally productive and cotton cloth is manufactured. Pop. tn., 44,000.

Belgian Congo, see CONGO, BELGIAN.

Belgiojoso, tn. of N. Italy, 8 m. E. of Pavia. Pop. 4500.

Belgiojoso Christina, Princess of (1808-1871), It. patriot and authoress. B. at Milan, she was the daughter of the Marquis Trivulzio, marrying the prince of Belgiojoso. In 1848 she supported the It. revolution, and at her own expense raised a troop of volunteer patriots. On the defeat of her party in the following year her property was confiscated and, an exile, she returned to Paris, where she continued her literary work. She d. at Milan.

Belgium, country of N.W. Europe. Since 1830 constituted as an independent kingdom, it was anciently a part of Gallia Belgica, so called from the tribe the Belgæ (q.v.). It is bounded on the N. by the Netherlands, on the S. and S.W. by France, on the E. by Luxemburg and Germany, and on the N.W. by the North Sea. It lies between lat. 49° 30' and 51° 30' N. and long. 2° 33' and 6° 25' E. It has an area of about 11,780 sq. m., about one-eighth of the area of Great Britain. Its greatest length is a line drawn from Ostend to Arlon, about 174 m. It is divided into 9 provs., Antwerp, Brabant,

E. Flanders, W. Flanders, Hainault, Liège, Limbourg, Luxembourg, and Namur. Its cap. is Brussels. In general B. is a flat country, the greatest height to which any elevation rises is about 2270 ft. In the S. and E. it takes the general aspect physically of N. France, while in the N. and N.W. it resembles the Netherlands. A continuation of the Ardenne uplands separates the riv. valleys of the Meuse and the Moselle, and extends in a N.E. direction into the Rhineland. The provs. of Liège, Luxembourg, and Namur are divided by numerous ravines and streams, by valleys and ridges of hills. The vegetation is poor and the country in this part is covered with forests, which become less extensive as approach is made to the coast. The N. and W. provs. consist of well-watered and extensive plains, which are easily cultivated. In the provs. bordering the sea and the lower Scheldt the inundations of the sea are only kept back by the dikes which have been built. Nearly 200 sq. m. of land are thus artificially protected from the inroads of either the sea or rivs. Those lands under sea level are locally called polders.

The shallowness of the North Sea and the entire absence of coastal indentations are incompatible with the existence of good seaports, though the port of Antwerp to some extent compensates for the disadvantages of the coast. The length of the coast-line is 42 m. The sand dunes are a feature of the coast of W. Flanders, and among the well-known watering-places are Ostend, Blankenberghe, Knocke, and Nieuport Bains.

Rivers and Canals. The waterways of B. fall into 2 great divs., the navigable rivs., such as the Scheldt and the Meuse, and the system of canals. The 2 great rivs. of B., the Scheldt and the Meuse, enter that country from France, where they have their source, and enter the sea in the Netherlands. They are navigable throughout the whole of their course in B. and are supplemented by a number of tribs. which enter them during their course through B., and some of which are themselves navigable. The course of the Scheldt through B. is about 110 m., its prin tribs. being the Lys, the Dender, the Durme, and the Ruppel. The Meuse has about 115 m. of navigable water in B. and receives in its course the waters of the Sambre and the Ourthe. Another riv. of B. is the Yser, which enters the sea at Nieuport, and which is navigable for about 30 m. In addition to these systems of natural waterways, the country is also supplied with an excellent canal system. These canals number 26, and have an entire length of over 550 m. The chief canals are from Bruges to Ostend, from Brussels to Charleroi, from Brussels to Willebroeck, and from Ghent to Bruges. The most important is the Albert Canal, 81 m. in length; it runs from Antwerp to Liège, and was constructed for the traffic of 2000-tonners.

Climate. The climate of B. is similar to that of England; it is, however, a little colder in winter and hotter in summer.

The S.E. part is to be preferred to the damp and hazy atmosphere of the N. and N.W. Frost is usually not encountered until the middle of Oct., nor after the middle of Apr. The mean ann. temp. is about 50° F., while the mean ann. rainfall of Brussels is about 28 in., or about 3 in. less than that of London. The rainfall, however, varies from an average of 27 in. in the W. to a little over 40 in. in the E. of the country.

Agriculture and Forestry employ well over one-fifth of the available Belgian man power, estimated at 4 million people. At least 4.5 million ac. are cultivated, and there are about 1.3 million ac. of forests, half of which is scientifically exploited under gov. superintendence. About 60 per cent of the cultivated area is covered by little farms of from 2.5 to 12.5 ac. There are also some 840,000 small holders, who cultivate less than 2.5 ac., and only a relatively small number of really big farms. Cultivation in B. is, however, so intensive that B. produces about 80 per cent of its own agric. needs. The chief products are (1946-47):

	Area acres	Estimate metric tons
Wheat	395,000	328,000
Rye	265,000	206,000
Oats	475,000	445,000
Barley	155,000	137,000
Potatoes	200,000	1,553,000
Sugar beet	110,000	1,470,000
Ordinary beet	215,000	5,160,000
Flax	80,000	180,000
Chicory	10,000	14,000
Tobacco	12,000	10,000

Hay-lands and meadows occupied 2,125,000 ac., fruit an area of 170,000 ac., and leguminous plants 80,000 ac. There is an important floriculture in the Ghent region. To improve the breeds and to introduce modern farming methods national, provincial, and local exhibitions of horses, cattle, agric. implements, and produce are regularly held, at which prizes are given. Breeding of live stock is also an important industry. In 1946 (end Dec.) there were 309,000 horses and 1,652,000 cattle, besides 775,000 swine, 143,000 sheep, and 73,000 goats.

Minerals. The mineral wealth of B. is also of great importance. Mining employs 175,000 workers. The prin. minerals are coal and stone. The iron deposits are nearly exhausted. The output of ore was 39,000 metric tons in 1946 (177,000 in 1939 and 113,000 in 1942). The lead and zinc mines, too, are more or less entirely exhausted. Coal is found principally in two basins: (i) the S., which may be divided into an E. basin of 100,000 ac., and a W. basin of more than double that area. The chief centres of the W. basin are Mons, Charleroi, and Namur, while the centre of the E. is Liège. (ii) The N. basin, which covers 250,000 ac. of the Limbourg prov. This rich reserve of coal deposits has only

been exploited since 1917. The chief centres are Beringen, Genk, and Elsden. The coal found in B. varies from anthracite to the richest of gas coal. The output was 22.8 million metric tons in 1946 (29.5 in 1938 and 15.7 in 1945). It is the intention of the Gov. to nominate a national council for the coal mines to co-ordinate all problems. The production of freestone, porphyry, granite, marble, gravel, limestone, and sand for glass is also of great importance. About 15,000 men are employed in 575 stone-pits, and their output is valued at well over 500 million francs (1943).

Industry. The metallurgic industry is the most important of B., and employs about 230,000 people. The manuf. of iron is centred in the Sambre and Meuse valleys which cross the S. coal basin. In 1946 2.20 million metric tons of iron were produced, and nearly 2.25 million metric tons of steel. There are, in addition, numerous lead, zinc, copper, silver, and other non-ferro metal works throughout the country. An important amount of the raw material goes to the Belgian factories producing power installations, locomotives, wagons, ships, weapons, bicycles, motor cars, cables, and tools of all shapes and sizes. Next to this industry comes the manuf. of textiles, employing about 165,000 persons, half of whom are women. The chief centre of the cotton industry is Ghent. Woollen manuf. is carried on in the region of Verviers. Linen is the chief industrial product of the Lys valley. Lace is made at Brussels, Malines, and Bruges. At least 1000 silk-weaving looms are working in various tns. throughout the country. Other important industries include food, chemicals, leather, glass, furniture, paper, tobacco, pottery, clothing, building, and transport.

Trade. B. being a manufacturing country the import of raw materials and the export of manufactured articles are necessarily complementary. B.'s situation at the cross roads between other manufacturing countries, its easy communications with the sea, as well as inland, make B. also a transit country. Commercial branch houses employ well over 500,000 people. In 1946 Belgian seaports loaded 13 million metric tons and unloaded 5.2 million. Provided with a good canal system and railways covering 6000 m., quick transport is assured. Seven thousand barges are in use for the riv. and canal transport. The Belgian merchant navy, however, was never of great importance. Imports and exports for 1946 and 1947 (partly) were as below:

IMPORTS (1946)

Metric tons: 19,740,000
Value: 52,560 million frs.
(From United Kingdom 9000 million frs.; 3300 in 1945.)

First half-year 1947:

Metric tons: 12,080,000
Value: 36,330 million frs.

EXPORTS (1946)

Metric tons: 7,440,000
 Value: 29,650 million frs.
 (To United Kingdom 2000 million frs.;
 67 in 1945.)

First half-year 1947:

Metric tons: 5,670,000
 Value: 28,340 million frs.

With Luxembourg B. has had a customs union since 1922. In June 1947 an agreement was signed with the Netherlands to join this union.

Government and Constitution. The gov. is based upon the strictest liberal principles; all power emanates from the people. Justice is free to all, the press is free, the people are surrounded on every side by safeguards designed to ensure to them the proper gov. of their country and their own personal liberty and freedom of conscience. The gov. is a constitutional representative and hereditary monarchy (Constitution of 1831). Those sections of the Belgian Constitution which regulate the legislative power were revised in 1921. The legislative power is vested in the king, the Chamber of Representatives, and the Senate. Judicial power is exercised freely without dependence upon any authoritative influence by provincial councils. The royal succession is in the direct male line in order of primogeniture. The right of successors is forfeited by marriage without the king's consent, but may be restored by the king with the consent of both Houses of Parliament. The king can do no wrong, his person is sacred, and the ministers are responsible for all his acts. He cannot suspend or dispense with the laws. He has power to nominate to all civil and military offices, and he commands both army and navy. He can declare war, make peace, and conclude offensive and defensive alliances and commercial treaties which he must communicate to the Chambers. He has power in default of male heirs of nominating his successor with the consent of the Chambers. He can only appoint one regent, and under a regency the constitution cannot be altered. The legislature (Chamber and Senate) meets annually in Nov., and must sit for at least 40 days. The king has the power of dissolution, and on dissolution a fresh election must take place within 40 days. The Chamber of Representatives is chosen by the people, and consists of 1 member for every 40,000 inhab. To be a general elector it is necessary to be a Belgian by birth, or to have received the 'grand nationalisation,' to be not less than 21 years of age, to be a male (very few women have the vote, and those mainly war widows), and to have resided in the constituency for a minimum period of six months. In order to be eligible as a deputy it is necessary to be a Belgian, to live on Belgian soil, to be in full possession of civil and electoral rights, and to be at least 25 years old. For the Senate the minimum age limit is 40 years, and candidates must fulfil one out of twenty special conditions. Each deputy has an

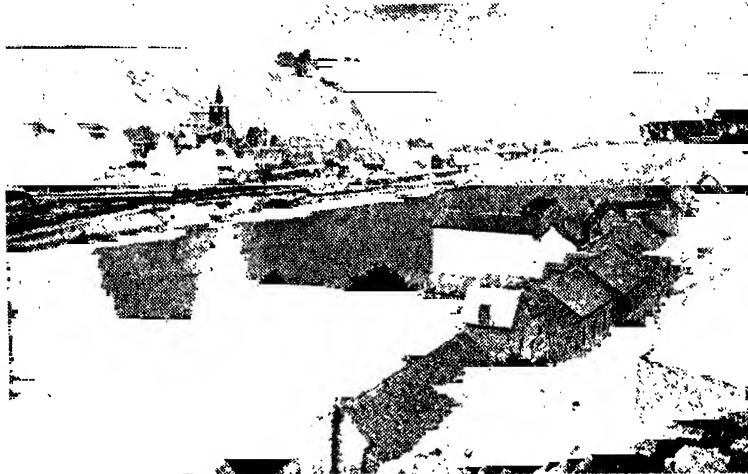
ann. allowance of 60,000 francs and a free pass all the year over Gov. and companies' railways. Senators receive 42,000 francs per annum. The number of members elected directly to the Senate is equal to half the number of members of the Chamber of Representatives. Each provincial council nominates, for every 200,000 inhab. of the prov., 1 provincial senator. Each provincial council elects at least 3 senators. There are at present 44 provincial senators. Senators are elected (or co-opted) by the Senate itself in the proportion of half of the preceding category. The king has the right of appointing his own ministers. They have the right of access to the Chambers, must appear on request of the Chambers, and may take part in debates. They may vote when they are members. They can be dismissed at pleasure, and may be charged by the House of Representatives before the court of cassation. For judicial purposes B. is divided into 26 arrons, and 230 cantons. For administrative purposes into 41 arrons, 211 cantons, and 2670 coms. The provs. and coms. enjoy a considerable measure of local gov. Proportional representation applies to the provincial and communal elections. Each prov. has its prov. council elected at the same time as the members of the legislature. The governor is appointed by the king. Each com. has a council re-elected every 6 years. The council nominates its aldermen. The burgomaster is appointed by the king.

Language. The languages spoken in B. are Fr. or Walloon, a dialect of anct. France, and Flemish or Dutch. The Fr. dialect prevails in the S. and the E., the Flemish or Dutch in the provs. of Antwerp, Brabant (N. half), Flanders, and Limbourg. Officially the two languages are equally used. While the educated in Flanders have mostly a good knowledge of the Fr. language—which, to some extent, they prefer to Flemish—the Walloons are not so likely to learn the other national tongue. Ger. is spoken in the E. part of Liège prov. and in the Eupen and Malmédy dists., where Fr. too is generally understood throughout. In 1944, conjointly with the Dutch Gov., it was decided to simplify the written language. Since May 1947 the use of the new rules for the writing of the Dutch language is obligatory in all gov. services. In most schools the new system was being taught a year earlier.

Education. The educational institutions may be classified as primary, middle, superior, and special. In addition normal schools have been estab. by the Gov., by some provs. and tns., and by school committees to train teachers for elementary and middle schools (*athénées, lycées, and collèges*). Since 1914 all children from 6 to 14 are bound to go to school, and it is a duty of the State to give this primary education free of charge. Those schools which are subsidised by the Gov. are under frequent inspection and the programmes must be in accordance with a model State programme. The superior institutions are the 4 univs. The 2 State univs. at Ghent and Liège were

erected under the Dutch Gov. (1816-17). In 1930 the Ghent univ. became a Flemish univ. The Catholic univ. of Louvain dates from 1426. The free univ. of Brussels dates from 1834. The special schools are chiefly technical, engineering, agric., mining, commercial, normal, military, and navigating schools. In 1923 the Colonial School at Antwerp (estab. in 1920) and the School of Tropical Medicine were constituted a colonial univ.

the time of the 1830 revolution, but its hist. as part of the Netherlands goes back to the time of the Romans. The ter. covered by B. to-day was already inhabited in the early Stone Age (Palaeolithic). Hist. starts with the conquest by Caesar. In the Rom. period it formed part of Gaul, and was distinguished by the name of Gallia Belgica. It was inhabited chiefly by Celtic tribes, although there were many traces of tribes of Germanic origin.



THE RIVER MEUSE AT BOUVIGNE, PROVINCE OF NAMUR

E.N.A.

There are the various royal academies and conservatoires devoted to the fine arts; besides well-endowed museums and libraries, and numerous scientific and literary societies.

Population and Religion. The pop. of B., including Eupen and Malmédy, was estimated to be 8,388,000 at the end of 1946, which total may be roughly divided into 4½ millions of Flemings and 3½ millions of Walloons, while there are about 70,000 Ger.-speaking Belgians and some 300,000 foreigners. The pop. of Brussels with 13 adjacent coms. is 870,000, of Antwerp with 8 adjacent coms. 530,000. The next tns. of importance are Liège and Ghent. The religion of the country generally is Rom. Catholic, although full liberty of conscience is granted to all, and all ministers, no matter of what denomination, are paid by the State. In 1945 there were 6407 Rom. Catholic ministers, 27 Protestant, 77 Jewish, and 9 Anglican. No inquiry about profession of faith is made by the census authorities. The kingdom is divided into 6 Rom. Catholic dioceses, an archbishop having his see in Malines. There are also a number of conventual houses.

History. The hist. of B. as an independent kingdom can be said to date only from

By the influx of the Franks into this part of the country the Ger. tribes were increased, and it is the hist. of the Franks in Europe that forms the early hist. of the Netherlands. The Salic Franks settled in the region between the lower Rhine and the North Sea. At the end of the fifth century, under Clovis, they had conquered the whole of Gaul (France). In the beginning of the ninth century the whole country formed part of the empire of Charlemagne. After his reign his empire was gradually divided. Flanders and the W. provs. went to France, the E. provs., including Brabant, to Germany. During the feudal Middle Ages different hereditary counties, duchies, bishoprics, and lordships were estab. In the meantime the tns. rose to power. Flanders with its cities became one of the most important counties, and had to struggle constantly against France to maintain her independence. Towards the end of the fourteenth century the line of Flemish counts became extinct, and their ter. passed into the hands of the dukes of Burgundy, and at the beginning of the fifteenth century, through various marriages and by inheritance or purchase, all the provs. became united, and the industry of the Netherlands flourished

...tly. In 1477 the daughter of Charles the Bold, Mary, married the Archduke Maximilian. In this way began the connection of the Netherlands with the house of Austria. The Netherlands were passed on by the emperor to his son Philip, who married the daughter of Ferdinand and Isabella of Spain, and was the father of the Emperor Charles V. Dying considerably before his father Philip left the Netherlands to his son, by whom it was incorporated with the Sp. crown, and who began the connection of the Netherlands with Spain which lasted up to the treaty of Utrecht, 1713. With the beginning of the rule of Charles V. we get also the beginning of the spread of Protestantism. During the reign which followed we get the bloody religious wars of Philip II. The N. provs. broke away, but B. remained under Sp. rule. For a short time after 1598 an independent gov. was set up there, but it failed owing to the death of the Archduke Albert, and the country reverted to the crown of Spain. In the century which followed, dist. after dist. was ceded to France during the wars with Spain and following the war of Devolution. By the treaty of Ryswick (1697) a great amount that had been lost at Nimègue (1678) was restored. By the treaty of Utrecht, which concluded the war of the Sp. Succession, B. was ceded to Austria. During the century which followed, the fortunes of the Austrian Netherlands underwent many vicissitudes. In the war of the Austrian Succession B. was overrun by France, but all conquests were restored by the treaty of Aix-la-Chapelle of 1748. The Seven Years' war left B. unmolesied, and under Maria Theresa it prospered. But Joseph II., the enlightened despot, roused anger by his reforms and danger by his attempt to open the R. Scheldt, and before his death B. had declared itself an independent nation—'United B.' Leopold II. promised an amnesty in return for surrender, but the Belgians held out and were subdued by an Austrian army. Then came the days of the Revolution and Napoléon. The battles of Jemappes and Fleurus placed B. in the hands of the Fr., the treaty of Campo Formio (1797) confirmed that possession, and for the rest of the Napoleonic period B. became to all intents and purposes an integral part of France, ruled by the Code Napoléon. After the abdication, 1814, B. again passed to Austria, and was administered by an Austrian governor-general, but in 1815, by the Congress of Vienna, it was united to Holland, and William Frederick of Nassau became king of the Netherlands, taking the oath in Sept. 1815. It was an unfortunate alliance, and a feeling of discontent spread throughout the whole country. Nevertheless the prosperity of the country increased. The revolution of Paris of 1830 was successful: the revolutionary spirit seized the Belgians, and the cry 'Imitons les Parisiens' roused them to successful imitation of the citizens of Paris.

The Belgians again declared in favour of independence and were successful in

keeping at bay the forces of the Dutch. At the congress of the 5 great powers held in London, it was agreed that the country of B. should be independent, that it should be a constitutional monarchy, not a republic, and that the Orange Nassau family should be permanently excluded. The election of Leopold of Saxe-Coburg was the signal for a fresh Dutch invasion. The crisis was terminated in 1839 by the action of the great powers, who forced a settlement which was in effect the Treaty of XXIV. Articles, drawn up 8 years before. By its terms B.'s share in the national debt of the Netherlands was reduced and the ters. in dispute were partitioned, but to compensate for territorial losses the neutrality of B. was guaranteed. It was this treaty which became known as 'the scrap of paper.' From 1839 to 1914 B. maintained its independent neutrality. After 1850, however, the constitutional party began that series of reforms which gained for B. the position of one of the freest countries in Europe. The question of Luxemburg threatened in 1867 the peace of Europe, and B. took part in the congress which prevented war breaking out. In 1870, on the outbreak of hostilities between France and Germany, B., fearing invasion, mobilised her troops, but her neutrality was recognised. In 1885 the Congo Free State was acknowledged to be under the presidency of the king of B., Leopold II., who had succeeded his father in 1865. Leopold II. d. in 1909, and was succeeded by his nephew Albert.

At the beginning of his reign King Albert was credited with socialist sympathies, and in 1913 a general strike was called with the object of obtaining equal manhood suffrage and the abolition of the system of plural votes. A strike with similar intentions had taken place in 1893, soon after the creation of a new political force, the Labour party, in 1885. In 1899 proportional representation had come into being, but it was not until 1918 that plural voting was abolished. In the strike of 1913 Albert stood by the gov. of the Catholic party, but later, in advising the withdrawal of an Education Bill, to which the Socialists objected, the king showed his strict impartiality. At this juncture Albert paid a state visit to Berlin, and on his return he initiated a Bill introducing compulsory military service. Although the majority of the people relied on the 1839 treaty, especially as it has been respected during the Franco-Prussian war in 1870, it had been the policy of Leopold II. to make B. secure from invasion, and this policy was also adopted by Albert. Leopold had encountered parl. opposition in obtaining the credits necessary for the fortification of Liège, Namur, and Antwerp, and although under Albert compulsory service was estab., it had not had time to take effect before B. was invaded by Germany on Aug. 3, 1914. Under Gen. von Emmich the Gers. attacked Liège with a recklessness which caused them great losses in the face of the heroic resistance of the Belgians. (See LIÈGE.) The

reduction of Liège took 12 days, and the Belgian army was driven back to Louvain, whence it was further driven back to Antwerp. Louvain was looted. (See LOUVAIN.) On Aug. 20 a Ger. army under Gen. von Kluck entered Brussels, while another army under Gen. von Bülow subdued the fortress of Namur. The way to France now lay open, but the Ger. army was harassed by the Belgians, who were entrenched at Malines and Antwerp. On Oct. 10 Antwerp surrendered after a successful withdrawal of the army to the W., and the whole of B. was occupied by the Gers., save for the small S.W. corner from Nieuport to Ypres. B. was now under a Ger. military occupation, and Gen. von Bissing was made governor. After a period of terrorism, attempts were made to set industry going again. Men who would not work for the benefit of the enemy were deported, and from 1916 to 1917 nearly 150,000 men were sent to work in Germany. When it was found in 1917 that the passive resistance of the workers could not be broken, Belgian industry was dismantled and many of the machines were transported to Germany. One aim of Von Bissing's policy was to divide B. against itself by supporting the Flemish movement and to corrupt the loyalty of the Flemings by setting them against the Walloons. The assumption was that B. was an artificially created state without any real national unity.

Meanwhile the remains of the Belgian army were stationed on the extreme left of the allied front, and withstood severe fighting in the valley of the Yser. (See FRANCE AND FLANDERS, CAMPAIGN IN.) After the fall of Antwerp the coast tns. of Zeebrugge and Ostend had fallen into Ger. hands, but in 1917 they were rendered ineffective as submarine bases by some ships being sunk by a Brit. squadron at the entrance of the harbours, thus partially closing them. (See VINDICTIVE; ZEEBRUGGE.)

The treaty of Versailles, which ended the war, gave B. the status of a sovereign state, free to make what alliances she wished, but the 1839 treaty guaranteeing Belgian neutrality was abrogated. The logical outcome of this was that B. contracted a defensive alliance with France and England. B. also gained the dists. of Eupen and Malmédy, and the com. Morosnet, ceded by Germany, thus adding 380 sq. m., which in 1925 were made part of the prov. of Liège.

At the end of the Ger. occupation B. was faced with the task of reconstruction. Belgian industry, which had always been a formidable competitor with Germany, had been designedly disabled. The iron and steel works had suffered the most, with consequent unemployment. Ghent was industrially a dead and deserted city. The identification and return of industrial equipment which had been transported to Germany were a slow process, although required by the terms of the Armistice; but in the 10 years that followed reconstruction was rapid. To enable the Belgian Gov. to carry through

the work of reconstruction commercial credits were arranged with the United Kingdom, Canada, the U.S.A., and France in favour of B. to the extent of £31 millions. B. also claimed 6500 million gold marks from Germany to compensate for the valueless paper marks circulated during the occupation. This claim was not considered by the Young reparations experts, but a private settlement was reached in July 1929, whereby Germany agreed to pay 16,200,000 rentenmarks by Mar. 1930, with subsequent annuities during the next 36 years. In 1925 B. was faced with a financial crisis, and the franc was set upon a downward course. As a drastic measure the Gov. obtained plenary powers, and rehabilitation was brought about by the 'industrialisation' of the State railways and the telephone and telegraph services. On Oct. 25, 1926, the franc was stabilised by royal decree at 175 to the £, while a new monetary unit, the belga (*g.v.*) was estab. for foreign trade on a gold basis.

A conspicuous feature of Belgian politics after the 1914-18 war was the rise of the *Parti Ouvrier Belge* (Belgian Workman's party), under which name were grouped the Socialists, with Emile Vandervelde as their famous leader. The *Parti Ouvrier Belge* became a political organisation, having over 600,000 subscribing members. They held to Marxian principles, but the present realisation of practical ideals was their policy. Shorter terms of military service, vocational education, and insurance were 3 of their objectives. The *Parti Ouvrier Belge* rejected Communism, but as a working-class party it has polled a considerable number of votes. Proportional representation, which gainsays any one party a large majority, made coalition govs. inevitable in B. The 1919 elections for the Senate and Chamber were held on a one man, one vote basis, and the parliament which had thus unconstitutionally come into being revised the constitution in 1921 in order to legalise the simple manhood suffrage by which it had been elected. The motion to extend the suffrage to women, which was put forward in 1925, was defeated, although in 1919 some women conspicuous for patriotic war service had been allowed to vote. The Socialists forced a general election, and gained such success that in July 1925 Viscount Pouillet formed a Socialist-Catholic coalition Gov., in which Vandervelde, the Socialist leader, was foreign minister. In this capacity he signed on behalf of B. the ill-fated Locarno treaty, the aims of which he had done much to further. In May 1926, Pouillet's ministry gave way to one formed by Henri Jaspar, also of the Catholic party. Vandervelde still kept his office, but the Socialist demands for a shorter military service of only 6 months, together with other military reforms, precipitated a crisis. M. Jaspar dissolved his ministry, but formed it again with the exclusion of Vandervelde and the Socialists. In 1929 there was a crisis over the language problem. This problem is a very real one, and the Flemish movement

gained much prominence after the war. In 1930 the univ. of Ghent was made Flemish, and provision was made for the teaching in schools to be given in the language prevalent in the dist. In 1932 the language problem was ameliorated by a law dividing B. for administrative purposes into 3 sections: Wallonia, where only Fr. was to be used officially; Flanders, Flemish; and the Brussels dist., which was to be strictly bilingual. The law does not apply to the Ger.-speaking dists., Eupen and Malmédy. A Gov. Bill for a credit of £6,000,000 to provide defence works on the E. frontier and other military works was passed in 1933. War memories remained bitter, as was shown by the refusal of the Cabinet to restore to their offices state servants who had been dismissed because of 'unpatriotic conduct' during the Ger. occupation. Most of these were Flemings, some of whom had taken steps to organize a separate Flemish state. On Feb. 17, 1934, King Albert was killed while mountaineering alone in the Meuse Valley and was succeeded by his son, Leopold III. (b. Nov. 3, 1901). The latter's wife, Queen Astrid, was killed in a motor accident at Lake Lucerne, Aug. 29, 1935.

Since 1925 B. had placed its faith in the Locarno treaty, and supported the policy of collective security. In 1936, however, Germany's repudiation of Locarno increased Belgian fears of another European conflagration, and the failure of the League of Nations successfully to impose sanctions against Italy in the same year produced in B. a tendency away from collective security towards isolation, self-dependence, and rigid neutrality. Consequently at the end of 1936 King Leopold gave a new direction to Belgian policy. With the concurrence of Great Britain and France, B. was released from its Locarno obligations, and at the same time received from the 2 W. powers a unilateral promise of support in the event of aggression. Some months later, on Oct. 13, 1937, Germany also confirmed the inviolability of B., and undertook to respect Belgian ter. except in the event of Belgian participation in military action directed against Germany. It followed from the policy of neutrality and rejection of military alliances that B. should increase its dependence on its own armaments, and expenditure between 1936 and 1940 was the highest in Belgian hist. A system of defensive fortifications was developed on the E. border opposite the Ger. frontier, and the period of military service considerably lengthened. Belgian strategy, however, was conditioned by Fr. preparations for prolonged siege warfare, and defence in depth was impossible to organize in a country so narrow that a retreat of 60 miles would take its army back to the coast. Had the Maginot line been continued northwards from Sedan, that combined with the fortifications of the interior might have provided an adequate defence, but the efforts of the Belgian Gov. to induce the Fr. Gov. to extend the line always met with refusal.

On Aug. 26, 1939, 5 days before the Ger. invasion of Poland, the Ger. ambas. to B. repeated his country's assurances of respect for the integrity of B., and on the outbreak of war on Sept. 3 B. reaffirmed its strict neutrality. Two months later, on Nov. 7, in the hope of stemming the tide of events, King Leopold conjointly with the queen of the Netherlands made an offer of mediation, but the hope expressed of an equitable peace proved fruitless. The first warning came in Jan. 1940, when 2 Ger. officers made a forced landing in Belgian ter., and plans were discovered in their possession, showing that the land behind the Belgian frontier had been carefully surveyed for landing-grounds for planes and parachutists. On May 10, 1940, before dawn, the Ger. air force launched an attack on selected airfields and centres of communication. In the afternoon M. Pierlot, the premier, declared that B. would resist the invader. Meanwhile King Leopold III. had taken immediate command of the army, and therefore delivered no message to Parliament. The Belgian Gov. now ordered general mobilisation and declared martial law. A 'black-out' was ordered throughout the country, and a rationing system put into force. On the afternoon of the next day news came to Brussels of fighting on the Albert Canal, a development which was unexpected. Yet, despite this great disillusionment, there was still no panic. But the situation changed when the pop. of E. B. began to flow back towards Brussels, bringing stories of Ger. methods of warfare similar to those employed against Poland the previous year. Small tns. of no strategic importance, like Tongres, Tirlemont, and St. Trond, had been bombed, civilian trains attacked and their passengers machine-gunned in the ditches. The public squares of Nivelles and Tournai were razed to the ground, and this set in motion a migration of 2,000,000 Belgians, first towards the W. and S. of B., and then into France. As the Gers. advanced they entered vils. and tns. whose economic activity had come to a standstill; for all the industries engaged on national defence had been transferred, their engineers and technicians, and skilled workmen, with their tools and machinery, having gone first to Paris, then to Toulouse, and finally to Bordeaux. Similarly, much railway material had been evacuated. When the Gers. reached Brussels on May 17 they found a half-deserted city. The tram service had ceased, for the Allies had demolished the bridges, and for sev. days there was no water, gas, or coal in the cap., while the canals were blocked by barges sunk by Belgian troops. On May 28 came the shock of the capitulation of the Belgian Army, followed by violent attacks on the king by the Fr. premier, M. Reynaud. M. Pierlot gave solemn assurances that B. would continue the fight. Meanwhile, however, the wave of Belgian refugees continued to pour into the centre and S. of France, and so great was the concentration of fugitives in Toulouse, to take but one example, that the number of

its inhab. had risen from 150,000 in Sept. 1939 to 700,000 by May 31, 1940. This influx was augmented by Fr. refugees from N. France and the Paris region. Conditions of living for the refugees were appalling. After the capitulation the Belgian Gov. was transferred to Poitiers, and the Chamber and Senate to Limoges. One of the clauses of the Franco-Ger. armistice of June 17 provided that the Fr. authorities should allow no former allies, who could bear arms, to leave the country, and this clause was soon applied, under Ger. pressure, to the Belgians. In Oct. there were still nearly 100,000 Belgian refugees in France, but a year later only 10,000 still remained, for political reasons, in the unoccupied zone, most of them living in the worst material conditions. On May 28 M. Pierlot, broadcasting from Paris, had declared that Leopold's capitulation had no legal validity, and that his decision had been taken against the will of his ministers, that Belgian officials were thenceforth absolved from their oath of allegiance to the king, and that B. would continue the struggle at the side of the Allies. On Oct. 22 M. Pierlot and M. Spaak, Belgian foreign minister, arrived in London from Spain, and here they joined their colleagues, the finance and colonial ministers. The Belgian Gov. thus set up in London was unquestionably a legal one under Article 82 of the Constitution which provides, *inter alia*, that, if the king becomes a prisoner of war, the council of ministers should exercise his powers on their responsibility. The Belgian Gov. in London was regarded as the legal gov. of B., not only by all the Allies, but also by neutral states.

The Ger. attitude in B., far from being reminiscent of the brutal outbursts of the 1914 Ger. soldiery, was correct, and even polite. The Ger. officers reiterated that the war between B. and Germany was over, and that the Belgians must look to a new era of collaboration. They did all they could to stir up the Belgian people against those Belgian authorities who had left the country. These refugee politicians were attacked by the Rexist and Flemish Nationalist parties. The reaction of the Belgian masses, who had remained in B. throughout, was one of resignation. Their disaster had been too appalling for them to entertain any hope of salvation. Slowly the factories started work, and train services were resumed; for the manufacturers realised that if they refused industrial production for Germany they would get no foodstuffs. But about this time Great Britain's determination to continue the struggle was awakening the first hopes of the Belgian people, and acts of sabotage became more frequent. Since May 28, 1940, King Leopold had been a prisoner in the castle of Laeken. A legal pronouncement by eminent Belgian lawyers stated that in his capacity as head of the army the king was within his rights in signing the capitulation, and in allowing himself to be taken prisoner with his fellow soldiers; but that this fact in no way changed the nature and

authority of the Gov., which remained still the country's sole legal gov. Leopold allowed the archbishop of Malines to state in a pastoral letter, in his name, that he had committed no act of a political nature, and that he had signed no pact even of a military nature with the enemy. The king's determination to adhere to this course helped in large measure to cripple Ger. machinations designed to divide Belgian public opinion.

Ger. 'fifth columnists' and their sympathisers in B. made strenuous efforts to undermine Belgian hopes of eventual liberation. Léon Degrelle, the Rexist agitator, and other dangerous Fascist party leaders, were transported to France when the war broke out. They had now returned to menace the patriots through the connivance of Gen. Baron von Falkenhausen, the Ger. military governor of B. and N. France. The Gers. had posed as admirers of Flemish culture, holding centenaries of famous Flemish artists. In this they were assisted by insignificant exiles of the von Bissing regime of the previous war, who had taken up posts in Germany. To complete their div. of B. from the artistic standpoint, the Gers. also encouraged an autonomist movement among Walloon intellectuals, even to the extent of organising Walloon exhibitions at Düsseldorf. Léon Degrelle republished his paper, *Le Pays Réel*, and extolled Germany's New Order. Another traitor, Henri de Man, under the Union of Manual and Intellectual Workers, also propounded the thesis of resignation to the Ger. conquest and collaboration with the occupation authorities. But the true situation was shown by the fact that at the end of 1941 the total strength of the Rexist was only 2000 or less, and that of the Flemish Nationalist party only 5000, including women and children. Germany now ordered all the Flemish extremist organisations to amalgamate into one group, with a para-military organisation, the political activities of which were to be directed by the fifth-columnist Staf de Clercq. But the agitators were by no means of one mind, for Degrelle advocated a new state composed of B. and N. France, which would involve the revival of the Burgundian empire. The Belgian people, however, did not take these incongruities seriously and, unable to arouse any enthusiasm, the extremist leaders decided to form a Walloon Legion for service under the Gers. in Russia.

The Ger. economic exploitation of B. involved the inflation of the currency, and a rapid increase in the State's short-term debt. Within eighteen months a total of no less than 14,600 million francs in loans had been issued. Besides the State, the big cities ran into debt no less rapidly. The contributions towards the Ger. occupation expenses were estimated for the financial year of 1941 at a minimum of 15,000 million francs. The total sum of the State's debts rose in that year from 59,000 million francs to 85,000 million francs, exclusive of 13,000 million francs

due as war damage. The gradual requisitioning of supplies was ruthlessly carried out. Side by side with requisitioning, the Ger. policy aimed at gaining control over all industrial and business concerns. Ger. infiltration into Belgian commercial affairs was engineered by pressure brought to bear through the central clearing house in Berlin. Totalitarian principles were introduced into the economic structure even to the appointment in industry of *Führers* and assistant *Führers*. Some concerns refused to work

disturbances nor sabotage. Belgian patriots replied to executions by intensifying their activity. On Jan. 20, 1943, during the day, the Gestapo headquarters in Brussels were shelled by a Belgian R.A.F. pilot, who killed sev. Gers.

Naturally the Gers. tried to change the currents of education in B. by controlling appointments to chairs in the univs. In their attempt to gain control over the intellectual life of Flanders they concentrated on the univ. of Ghent because it is a stato institution, and its profs. are appointed by the Ministry of Education. In the effort to poison Belgian culture, hundreds of books opposed either to the National Socialist ideology or to the pan-Ger. policy of the Reich, were removed from public libraries, and all bookshops forbidden to sell them. All textbooks were revised by the 'protectors,' and wherever passages were to be found in hist. books dealing with Ger. atrocities in B., the passages were torn out. But despite these trials, miseries, and humiliations the spirit of the people remained indomitable. On Nov. 11, 1940, enormous crowds gathered round the tomb of the unknown soldier in Brussels, overcame the police, and laid a wreath on the Brit. monument. On May 10, 1941 and July 21, 1941, violent disturbances broke out following impressive ceremonies in most of the leading cities. The entire clergy, in accordance with the traditions by which it was inspired in the time of Cardinal Mercier, stood behind its leaders, particularly in offering unshakable resistance to extremist agitators, and in the encouragement of judicious patriotic conduct. Belgian morale was sustained by the underground press. According to *La Libre Belgique*, which began in 1915, more than thirty illegal newspapers were pub. in 1941-42 under various titles. Their chief aim was to expose the pillage and extortion practised by the Ger. occupation authorities, who executed a number of persons for editing, contributing to, or circulating these papers. In Apr. 1941 a decree signed by Gen. Raeder, who was at that time the head of the Ger. administration in B., ordered the dissolution of the municipal councils—which in B. had always enjoyed the highest prestige, popularity, and influence. Thenceforward the safeguarding of municipal interests was entrusted to individual burgomasters and aldermen who had to confine their activities to enforcing the decrees of the Gers. All through the occupation the Belgians were sustained by confidence in their ultimate liberation. To this the battle of Britain was the first great contributory factor. In that great battle 14 Belgian pilots in the fighter command won distinction by bringing down 27 Ger. planes for the loss of 6 of theirs, and after that the number of Belgian airmen in Great Britain was considerably increased. After the Franco-Ger. armistice of 1940 the Belgian ministers, as stated above, went to London. M. Albert de Vleeschauwer, minister of colonies, arrived in July 1940, and



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FLEMISH PEASANT GIRL MAKING
BRUSSELS LACE

for the Ger. authorities, and their directors were replaced by Ger. superintendents. As a result of passive resistance on the part of the miners the coal output was reduced, but 75 per cent of the output was sent to Germany for the manuf. of ersatz petrol, with the result that the Belgians suffered bitterly in the winter cold. Under the conditions of cold and hunger the surreptitious food traffic became a normal procedure, with numerous resulting prosecutions by the Gestapo. The Belgian working classes, after the Free Trade Union Movement was banned, were in sorry plight. Numbers of workmen were compelled to labour in Germany, where for the most part they were sent to dists. most liable to aerial bombardment. One consequence of this exploitation was that acts of sabotage against the property and installations of the Ger. army were more frequent than during any period of the previous war. But Ger. terrorism put a halt to neither

to him was entrusted the administration of the Belgian Congo. The collaboration of the Congo in the struggle was strengthened, and its considerable wealth put at the disposal of the Allies. Belgian troops, some from the Congo, took part in the Abyssinian victories of the Allies. M. Gutt, minister of finance, who also reached London, supervised the important gold credits B. possessed abroad. Measures were taken to recover the equivalent of the Belgian gold handed over to Germany by the complacency of the Vichy Gov. A Fr. ship sailed from Lorient having aboard the £65,000,000 sterling of Belgian gold which the Belgian Gov. had insisted should be conveyed under the care of the Brit. Admiralty to Britain. Later the ship reached Dakar (q.v.), and the gold was handed over to Germany. It was therefore decided to seize the gold, totalling 260,000,000 dollars, belonging to the Banque de France, and deposited at the Federal Reserve Bank of New York. By a resolution of Feb. 5, 1941, the New York Tribunal authorised the attachment of this amount which was duly carried out. Of all the Belgian forces put at the service of the Allies, the merchant navy suffered the greatest losses. Of a total tonnage of 420,000 tons carried by Belgian ships on May 10, 1940, only 220,000 tons were left by Dec. 1941. But more than 200 trawlers and fishing boats found refuge in Brit. waters, and carried out valuable work in spite of the danger from mines, torpedoes, and planes. The 23,000 Belgian civilians living in Britain in 1941 constituted then the largest allied colony in the United Kingdom. Most of them had reached England in May-June 1940, and most of them found employment under the Ministry of Labour. For information on the fighting in B. during the Second World War, see FLANDERS, BATTLE OF; WESTERN FRONT IN THE SECOND WORLD WAR.

On Jan. 1, 1944, M. Pierlot, the Belgian premier, broadcasting to B., promised liberation to his countrymen during that year. This promise was fulfilled by the successful invasion of the Continent by the allied armies. On Sept. 2, 1944, Brit. armoured columns reached Tournai, the first Belgian tn. to be liberated, and Brussels was freed on the following day, Sept. 3. Belgian forces co-operated with the Brit. and Amer. armies, and by Nov. 3 the whole of B. was liberated, following the end of the final Ger. resistance at Zeebrugge and S. of the Scheldt.

With the overthrow of the enemy Europe faced a long process of readjustment, and progress was slow. Of the countries in W. Europe the one to show the greatest progress was perhaps B., where a relatively high degree of political and economic stability was attained. But the issue of the return of King Leopold III. threatened to divide the country. In the later stages of the war the Gers. had removed the king and his family away from B., doubtless intending to use him as a hostage. On his liberation by the Allies, he wished to resume

his functions. The resistance movement, which naturally was a strong influence in the country, had become associated with the Left, and was opposed to the return of the king, who, in the opinion of many, was associated with undue submissiveness to the Gers. In view of this hostility, therefore, the Belgian Gov. refused to take responsibility for the return of the king. Hence the country remained under the regency of Prince Charles, count of Flanders, the king's brother. Leopold remained abroad, but did not renounce his right to the throne.

Literature. As there is no Belgian language it is impossible to speak about a Belgian literature. Nevertheless Fr., as well as Flemish works were being produced in the Middle Ages. (See also FLANDERS.—*Flemish Language and Literature.*) The Fr.-writing authors, Jean Bodel (thirteenth century), *Chanson des Saxons*; Jean Froissart (1337-1410), *Chronique de France, d'Angleterre, d'Ecosse, d'Espagne, de Bretagne*; Philippe de Commines (c. 1447-1511), *Mémoires, 1464-98*; and Jean Lemaire de Belges (1473-1525), *Illustration des Gaules et singularités de Troie*, took an important part in the formation of Fr. prose in B. After the Middle Ages, with the sustained oppression of other countries, all literary activity ceased for centuries. Only in the nineteenth century did Belgian literature assume a national character, distinct from the Fr. Charles de Coster (1827-1879), with his *Légende d'Uylenspiegel*, the story of a kind of Flemish Robin Hood, was one of the most important precursors of the revival. The combination of the Walloon and Flemish temperament—the one sensitive and delicate, the other meditative, simple, and close to nature—found its expression in the literature that sprang up, mainly under Fr. influence, in the second half of the century—in the personal and spiritual poetry of Émile Verhaeren (1855-1916) or the peasant novels of Camille Lemonnier (1844-1913). The latter, although he may have derived much from Zola, may be said to be the first distinctive force in Belgian literature. His *Contes flamands et wallons* was pub. in 1879, and his best novel, *Un Mâle*, in 1881. Maurice Maeterlinck (q.v.) was b. in 1862, and achieved a European reputation with his mystical and allegorical plays. Later in life he turned to writing essays in which he expressed his thought in more direct fashion. More narrowly Flemish in his outlook, though writing in Fr., is Georges Eekhoud (1854-1927), whose novels and stories were realistic and emotional portrayals of the life of his time. Besides Verhaeren, the other major Belgian poet of the nineteenth century was Georges Rodenbach (1855-98), whose poetry is also Flemish in character rather than Fr., and Charles van Lerberghe (q.v.) (1861-1907). Among other poets whose work continued into the twentieth century must be named Albert Giraud, Fernand Séverin, Max Elskamp, Paul Spaak, Henry Carton de Wiart, and Albert Mockel, whilst among the younger writers

Émile Cammaerts (q.v.) is pre-eminent. Belgian drama flourished during the twentieth century under the combined influence of Verhaeren and Maeterlinck. Crommelynck and Vanzype may be mentioned in this connection. The First World War gave an added impetus to the Fr. literature of B., and the Académie Royale de Langue et de Littérature Française de Belgique was founded in 1920. During the thirties, however, the tendency was more towards literature becoming independent of Fr. influence, while at the same time Fr. critics came to value the individual merits of Belgian writers, among whom Charles Plisnier, Pierre Bourgeois, Marie Gevers, Henri Michaux, André Baillon, Franz Hellens may be named from a generation of distinguished poets and novelists whose reputations date from the years before the Second World War.

Bibliography. D. C. Boulger, *The History of Belgium*, vol. i., 1902, vol. ii., 1909, and *Belgium of the Belgians*, 1911; E. Brangwyn and H. Stokes, *Belgium*, 1916; H. van de Linden, *Vue générale de l'histoire de la Belgique* (Eng. trans. by Sybil Jane, 1920), Liège, 1918; B. Whitlock, *Belgium under German Occupation* (2 vols.), 1919; L. Van der Essen, *A Short History of Belgium*, 1920; Émile Cammaerts, *Belgium*, 1921; G. W. T. Ormond, *Belgium and Luxembourg*, 1923; F. L. de Lannoy, *Histoire diplomatique de l'indépendance belge*, Brussels, 1930; H. Levy Ullmann and B. Mirkin-Guetzevitch, *Belgique*, Paris, 1931; H. Pirenne, *Histoire de Belgique*, vols. i.-vii., Brussels, 1932, and *La Belgique et la guerre mondiale*, 1929; Laurent Dechesne, *Histoire économique et sociale de la Belgique*, Paris, 1932; J. Wullus Rudiger, *La Belgique et l'équilibre européen*, Paris, 1935; *Grande Encyclopédie de la Belgique et du Congo*, Brussels, 1938; Georges Doutrepoint, *Histoire illustrée de la littérature française en Belgique*, Brussels, 1939; Lynn Brian, *The Charm of Belgium*, 1939; Anne Merriman Peck, *Belgium*, 1940; C. Cammaerts, *Twice in a Lifetime—Belgium 1914-40*, 1943; J. A. Goris, *Belgium in Bondage*, New York, 1943; Camille Huysmans, *About Belgium*, 1944; Walter Ford, *Belgian Handbook*, 1944; A. Delfosse, *The Underground Press in Belgium*, 1944; *Belgium* (United Nations series), Los Angeles, 1945; Roger Motz, *England and Belgium*, 1945; Louis Piérard, *Regards sur la Belgique*, Paris, 1945; *The Campaign of May 1940*, Belgian War Dept., Brussels, 1946; Léon van der Essen, *Deux mille ans d'histoire*, Brussels, 1946; P. Delantsehère, *La Belgique sous les nazis*, Brussels, 1946; Marcotte, *La Belgique dans le monde*, Brussels, 1946; Charles d'Ydewalle, *Psychologie de la Belgique*, Liège, 1946; J. A. Goris, *Belgian Letters: a short survey of creative writing in the French and Dutch languages in Belgium* New York, 1946; *Belgium: the Official Account of what happened 1939-40*, 1947; Mariol Thiry, *La Belgique pendant la guerre*, Paris, 1947; H. Pirenne, *Histoire de Belgique*, Brussels, 1947.

Belgorod, or Bielgorod (white town),

tn. of the R.S.F.S.R. on the R. Donetz, 73 m. S. of Kursk. It takes its name from a neighbouring chalk-hill. B. was an episcopal seat, and had 2 monasteries and 13 churches. Before the Second World War there were manufs. of leather, soap, woollens, wax, bristles, and hemp. The surrounding country produces fruit. B. was involved in the battles for the Donetz Basin and Klarkov in the Second World War, being occupied by the Gers. in the invasion of 1941; but it was recaptured by the Russians on Mar. 21, 1943. Pop. 30,000.

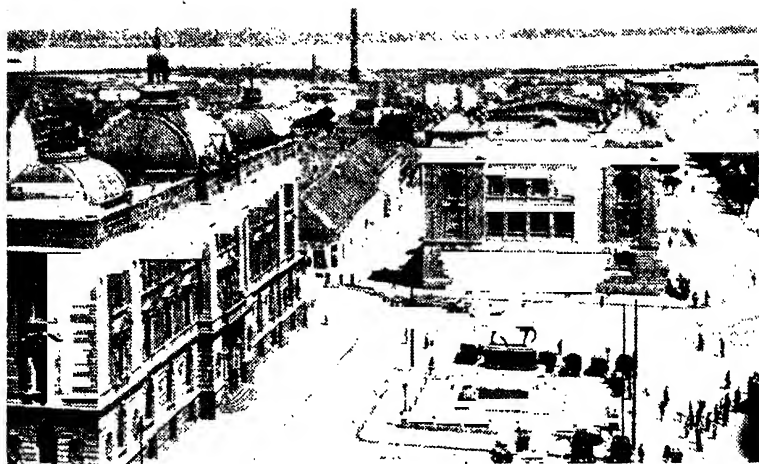
Belgrade (*Beograd*, white fortress), cap. city of Yugoslavia, and of the People's Republic of Serbia, situated at the confluence of the R. Save with the Danube, with its once-white citadel standing on a promontory, over 100 ft. high, jutting into the Danube. Pop. 388,200. The city had at one time a considerable Turkish quarter, but, with the exception of a single Mohammedan mosque and a few houses in Turkish style, this disappeared with the westernisation of the city, a process which began at the end of the last century. Since that time the city has grown, especially after the First World War, when it expanded to the E. and to the S., becoming a handsome, well-built city, with broad streets, public gardens, modern water-supply, electric tramways, wireless installations, numerous churches and public buildings, including a univ., museums, national library, and national theatre. B. possesses a Rom. Catholic cathedral, and is a patriarchal see. The port of B. is the second largest on the Danube, both that riv. and the Save being broad and navigable at this point. For this reason B. became the commercial exchange between the Balkans and central Europe. Its manufs. include arms, cutlery, saddlery, silks, carpets, cottons, and leather. The chief exports are wool, skins and hides, wax, honey, tan-bark, silk, cattle, pigs, and timber; while hardware, salt, pottery, and agric. produce are imported. The National Bank of the Serbs, Croats, and Slovenes is in B., and issued bank-notes secured on the state domains. An air-liner for passengers between B. and Zagreb was started in 1928, and before the Second World War a Fr. company operated a passenger and mail air service between B. and Paris via Bucharest and Vienna. The main Yugoslav railway runs through B., north to Subotica (Szabadka), there to Budapest, and S. through Nish to Salonika.

B. has had an eventful hist., being besieged in 1456 by the Turks, who were defeated by John Hunyadi; taken by them in 1522, and by the imperialists in 1688. It was recaptured by the Turks in 1690, and in 1717 surrendered to Prince Eugene. The Turks regained it in 1739, but lost it to Austria in 1789. It was restored to Turkey in 1791, and the Turkish garrison withdrew in 1867. During the First World War the situation of B. exposed it to Austrian attack, and the city was bombarded soon after Austria declared war on Serbia in 1914. Serbia was invaded, but it was not until Nov.

29, 1914, that the Serbian garrison evacuated the city. On Dec. 2 it was occupied by the Austrians, who, however, were driven out a fortnight later. In the autumn of 1915 General Mackensen took command of the Ger.-Austrian army on this front, and Serbia was again invaded. B. fell on Oct. 7, 1915, and remained in enemy hands until the end of the war. On the outbreak of war in 1939 Yugoslavia was not immediately involved, but B. suffered severely as a result of the *coup d'état* of Mar. 27, 1941, which set up a new gov. determined upon resistance to

Belapatam, tn. in Malabar dist. of Madras presidency, India, standing on the riv. of the same name, 4 m. from Cannanore.

Belief, term used ordinarily to denote assent to a statement, suggestion, or fact. Psychologists give various definitions of the term, and it would appear that while the acceptance of a certain association of ideas or reputed circumstances is required, it is not necessary that they be true. B. must not be confounded with knowledge, as predisposition and suggestion have undoubtedly a strong bearing



BELGRADE

General view showing the National Theatre.

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Ger. demands. On Apr. 6 Yugoslavia was invaded, and B., although declared an open tn., was for 3 days subjected to a rolling air bombardment of merciless severity. The heavy damage was widespread, and the city was occupied by the Gers. on Apr. 13, not again to be freed until Oct. 20, 1944.

Belgravia, residential dist. in the W. end of London, England, lying to the S. of Belgrave Square, and adjoining Hyde Park.

Belial, compound Heb. word, meaning that which is without profit or worth. It is often treated by the translators of the Bible as if it were a proper name, and has acquired personification by usage in such phrases as 'a son of B.' and in the passage, 'What concord hath Christ with Belial?' In the N.T. it is used in the changed form of Beliar, due to Syrian pronunciation. In Apocalyptic literature=Satan.

on the judgment of a connection of ideas; while lack of intellectual ability or use or the interposition of another B. as a truth, are means by which a true logical conclusion may be missed. In the Christian religion faith and B. are used as acceptance of and reliance in the teachings of the Bible, and more especially in Christ. See D. Hume, *A Treatise of Human Nature* (book 1. *Of the Understanding*), 1739; James Mill, *Analysis of the Phenomena of the Human Mind*, 1829; A. Bain, *The Emotions and the Will*, 1859; W. James, *The Will to Believe*, 1931.

Beligrad, see BERAT.

Belinsky, Visarion Grigorievitch (1811-1848), Russian writer and literary critic, b. at Chembar. His work, *Survey of Russian Literature since the Eighteenth Century*, appeared in 1834. A complete ed. of his works was pub. in 12 vols. in 1850-62.

Belisarius, Byzantine soldier in the

reign of the Emperor Justinian, probably b. in Germania, in Illyria, c. A.D. 505. He is first mentioned about 525, during the war between the Byzantine empire and Persia. About this time Procopius, from whose histories the events of the life of B. are gathered, became his secretary. In 530 B. was commander of the E. imperial army, and defeated a large Persian force at Dara, in N. Mesopotamia. In the next year the Persians invaded Syria, and B. was defeated at Callinicum on the Euphrates. He was recalled to Constantinople, where he married Antonia, a wealthy but profligate woman. Here he supported Justinian against the conspiracy of the 'green' party, who were attempting to make Hypatius emperor. In 533 he was sent into Africa to recover the imperial provs. held there by Gelimer, king of the Vandals. He landed in Sept. at Caput Vada, and advanced to Decimum, where he gained a victory. He then entered Carthage. The king was finally captured at Mt. Pappua, and B. returned to Constantinople, where he was honoured with a triumph. In 535 he was made sole consul. Later in that year he set out to recover Italy from the Goths. In 536 he took Naples and occupied Lower Italy, and at the end of the year entered Rome by amicable arrangement with the Gothic garrison. During 537 he was besieged there by Vitiges, the Gothic king, the siege being abandoned early in 538, when Vitiges retired to Ravenna. Narses was now sent from Constantinople with a reinforcement, but owing to a misunderstanding with B., resulting in the devastation of Milan by Braias, nephew of Vitiges, Narses was recalled, and B., now commanding both armies, refused to carry out a treaty, leaving Vitiges with the title of king and the provs. N. of the Po. In 540 he captured Ravenna, and took Vitiges prisoner, but was recalled by Justinian before completing his conquests. During 541-42 he was engaged in a campaign against the Persians, who had captured Antioch, but was recalled, degraded, and fined, on account of misrepresentations of his conduct. In 544 the Ostrogoths, under Totila, again invaded Italy, and B. commanded the expedition against them. He regained possession of Rome, but no reinforcements being sent him, he resigned his position, which was filled by Narses, and returned to Constantinople, where he stayed in retirement till 559. In that year he defeated the Bulgarians, who were threatening Constantinople. In 563 he was imprisoned on a charge of conspiracy against Justinian, but his innocence was soon established, and he was released after 6 months. He d. in 565, leaving 1 daughter, Joannina.

Belize, cap. of Brit. Honduras, on the bay of Honduras, at the mouth of the R. B. or Rio Viejo, which is navigable for 120 m. by canoe. The harbour is shallow and impaired by sand-bars, so that large vessels must load and unload by means of lighters; small vessels can enter by a channel through the reefs. Logwood, mahogany, tortoise-shell and bananas are exported. The tn. has swamps round it,

but is by no means the unhealthy place it was before the proper measures of control of yellow fever were put into force. Half the tn. was destroyed by a hurricane on Sept. 10, 1931, a great many houses collapsing through being submerged by the sea and over 200 persons being killed. It has been gradually rebuilt. B. is connected with other tns. in Honduras by means of telephone and telegraph lines. Air services are scheduled daily to and from Havana, Miami, Guatemala, El Salvador, Nicaragua, and Costa Rica from Stanley airfield. There is also a bi-weekly service to Jamaica. Pop. 17,000.

Belknap, Sir Robert, Eng. jurist, chief justice of the court of common pleas from 1374 to 1388, when he was removed for having, unwillingly, signed an affirmative to the question of Edward III., 'Whether he might by his regal power revoke that was acted in parliament.' In the succeeding parliament all the judges were arrested in Westminster Hall on a charge of high treason, but B. escaped with his life through the intercession of the bishops. (Fuller's *Worthies of England*.)

Bell, hollow, metallic instrument, in shape resembling a reversed cup, suspended by its apex or neck, and having in its interior a swinging clapper, hammer, or loose ball.

Bell-founding. Bs. are made of a kind of bronze, known as B.-metal (*q.v.*). In early times, Bs. were not cast, but were made of thin plates of hammered iron, riveted together. The B. called *Clog-an-cadhacha Phatraic* (the bell of Patrick's will) at Belfast, mentioned in the *Annals of Ulster* as early as A.D. 552, is quadrangular in shape and of this primitive type, as are also some of the Scottish Bs. The small Bs. discovered by Layard in the palace of Nimrod, on the site of the anct. city of Nineveh, are made of copper and tin, in the proportion of 10-1. During the Middle Ages the quantity of copper used was much reduced. In modern times the approximate ratio is 4-1 (*see* **BELL-METAL**). It was formerly thought that a mixture of silver with B.-metal sweetened the tone, but it has been proved that silver in any quantity is injurious to the tone of a B., great or small. Bs. have also been made of antimony, brass, steel, gold, and thick glass. Bs. cast of steel have a beautiful tone but a less sustained vibration. The casting of Bs. in England was originally practised in monasteries. It was then adopted as a trade by itinerant artificers. The art of casting in England has made little advance in modern times, and no Bs. of modern manuf. are better than those cast 400 years ago. The B. is first designed on paper; a core is then constructed of brickwork, covered with soft clay, which is moulded to the exact form of the interior of the B. to be cast. Over the core is fitted a soft model of the future B. Then a third heavy shell, moulded to the required shape, is placed over the model; the model is removed, and molten B.-metal is run into its place and left to cool until it has set. The following are recognised to be fair proportions for a B.; the

thickness of the edge to be one-tenth of the diameter, and the height 12 times its thickness.

History of Bells. Hand-Bs. or cymbals were employed by the Egyptians at the festival of Isis. Aaron and the Hebrew high priests wore golden Bs., alternating with pomegranate knobs on the blue robe of the ephod. The Gks. used Bs. in their camps; and the Romans employed them to announce the hour of bathing, and as a signal to begin selling in the market-place. The introduction of B.-ringing into the Christian church has been ascribed to Paulinus, Bishop of Nola in Campania (A.D. 353-431), probably because *nola* and *campana* are late Lat. words for B.; but the date of their introduction is a century later. They were introduced into Gaul about A.D. 500. In the seventh century, Bede mentions a B. brought by Benedict from Italy for his abbey at Wearmouth, and says Bs. were used at Whitby Abbey at the time of the death of St. Hilda, 680. Pope Sabinius ordained the ringing of Bs. to announce canonical hours in 604. It appears that Bs. were not used in Switzerland and Germany for religious purposes till the eleventh century. For a long time Bs. were comparatively small, and were often only hand-Bs. The *Clog-an-eadhachta Phatraic*, already mentioned, is 6 in. high, 4 in. deep, and 5 in. broad. Larger Bs. began to be cast in the thirteenth century. The largest B. in the world is the *Tsar Kolokol* of Moscow, which was cast in 1733. It is 21 ft. high, 21 ft. in diameter, and weighs 432,000 lb. In 1737, owing to a fire, it fell and sank into the ground; in 1837 a chapel was excavated below it, of which it forms the dome. Among other large Bs. are the *Amarapoora*, in Burma, 260,000 lb.; those at Rouen and Vienna, each about 40,000 lb.; Montreal Cathedral, 28,560 lb.; 'Big Ben' of the Houses of Parliament, 30,000 lb.; and the Great B. of St. Paul's, 11,470 lb.

The Uses of Bells. Bs. have been chiefly associated with ceremonies of a sacred character. In the Anglican and Rom. churches they are consecrated, have sponsors, are sprinkled with water, anointed, and receive names. Inscriptions on old Bs. are of interest, and show that superstitious ideas prevailed as to the power of Bs. over evil spirits, in dispelling storms, and putting an end to famine, pestilence, etc. The *Passing B.* was rung in order to terrify evil spirits from the dying body, as well as to admonish the living. By the eighteenth century tolling took place after death. The *Sanctus* or *Sacring B.* was rung during the celebration of mass. The *Pardon B.*, of pre-Reformation date, was tolled before or after service to call men to pray for the forgiveness of their personal sins. Other Bs., connected with religious services, are the *Gabriel* or *Ave B.*, the *Vesper B.*, and the *Bridal* or *Marriage B.* Bs. were also employed for secular purposes. They were used as a call to arms, as a warning of danger, particularly of flood and fire, and by watchmen at night. The *Curfew B.*,

supposed to have been introduced by William the Conqueror, was rung at 8 o'clock as a warning to men that it was time to extinguish their lights and go to rest. It was abolished by Henry I. in 1100. Bs. were, and still are, attached to cows and sheep (usually only to the leader of the herd or flock), as a signal to the shepherd. These Bs. or crotals are also attached to the front horse of a sleighing team in N. Europe, Russia, and N. America. The hanging of Bs., with wire connections, in houses was adopted during the eighteenth century, but has been replaced by the electric B.

Campanology, or the art of B.-ringing. Bs. may be chimed (*see* CHIMES), or rung in changes. Four Bs. give 24 changes, 8 give 40,320, while 12 give 479,001,600 changes. The ringing of Bs. so as to admit changes was at one time a fashionable art, for the *School of Recreations* or *Gentleman's Tutor* (1684) has a chapter on 'Advice to a Ringer.' The first known work on the subject is *Tintinnologia*, pub. by Fabian Stedman in 1668. The muffled peal is effected by covering half the clapper with a cap of leather. The art of pealing Bs. has been carried to great perfection in England. Consult: T. North, *English Bells and Bell Lorc*, 1888; A. S. Pease, *Notes on the Uses of Bells among the Greeks and Romans*, 1904; J. J. Raven, *Bells of England*, 1906; E. Morris, *The History and Art of Change Ringing*, 1931; F. P. Price, *The Carillon*, 1933; H. B. Walters, *Church Bells*, 1937. See also CARILLON MUSIC.

Bell, Alexander Graham (1847-1922), Scottish-Amer., inventor, b. Mar. 3, in Edinburgh, Scotland; educated at the Edinburgh High School and the Edinburgh and London univs. Removing with his father, Alexander Melville B., to Canada in 1870, he became prof. of vocal physiology in Boston Univ. in 1872, where his experiments resulted in the patenting of the telephone in 1876. He also invented the photophone and graphophone, and wrote many papers on electrical matters and on research work in connection with deaf-mutes.

Bell, Alexander Melville (1819-1905), Scottish-Amer. educationist, b. in Edinburgh, Scotland, on Mar. 1. Lectured on elocution in Edinburgh Univ. 1843-65, and from 1865 to 1870 at the univ. of London. In 1870 he removed to Canada, becoming instructor of elocution at Kingston, Queen's College, and in 1881 he moved to Washington, D.C. He devised the system of 'visible speech,' by which deaf-mutes are taught to speak.

Bell, Andrew (1753-1832), Scottish educationist, b. at St. Andrews, Scotland, on Mar. 27, and educated at the univ. there. In 1789 he was appointed chaplain of Fort Saint George in Madras, and superintendent of an institution for the education of the orphan children of the military. Being unable to obtain properly qualified assistants, he at last introduced a system of teaching the pupils through themselves, which proved highly successful. Returning to England, he pub. a pamphlet in 1797, *An Experiment*

in *Education made at the Male Asylum of Madras*. Joseph Lancaster (q.v.) founded a school on the principles which he developed, and the movement grew rapidly. He was buried in Westminster Abbey.

Bell, Sir Charles (1774-1842), Scottish surgeon and neurologist, b. in Edinburgh; educated at the High School, Edinburgh; in 1804 he came to London. Appointed surgeon to Middlesex Hospital, 1814, and raised that institution to the highest repute. Was interested in military surgery, when wounded troops came home from Spain, and visited Waterloo immediately after the battle, where he did the wounded great service. His *Anatomy and Philosophy of Expression*, written in 1804, describes the arrangements by which the influence of the mind is communicated to the muscular system. The investigations on which the work was based led to his great discoveries in the physiology of the nervous system. Thus in 1807, on the anatomy of the brain, he made the discovery of the various nervous functions corresponding to their relations to different parts of the brain. Again, it was B. who discovered that in the nervous trunks there are special sensory filaments, designed to transmit impressions from the periphery of the body to the sensorium and special motor filaments which convey motor impressions from the brain or other nervous centre to the muscles. In 1816-1818 he pub. a series of *Quarterly Reports of Cases in Surgery treated in the Middlesex Hospital*; in 1821 a vol. of plates, etc., entitled *Illustrations of the Great Operations of Surgery*, etc.; in 1824 appeared *An Exposition of the Natural System of Nerves of the Human Body*. In 1824 he accepted the chair of anatomy at the London College of Surgeons. Other works include *The Anatomy of the Brain* (1802); *An Essay on the Forces which circulate the Blood* (1819); *The Hand* (1833); *A Familiar Treatise on the Five Senses* (1841). His discoveries in physiology as a whole were the greatest since those concerning the circulation of the blood by Harvey.

Bell, Charles Frederic Moberly (1847-1911), Eng. journalist, b. in Alexandria; educated in England; returned to Egypt and entered business there in 1865. In 1875 he left commercial life and devoted himself to journalism, having already estab. a connection with *The Times*. In 1880 he was one of the founders of the *Egyptian Gazette*. He became famous as a *Times* correspondent during the Arabi revolt of 1882. In 1890 he returned to England as manager of *The Times*, in succession to J. C. McDonald. His enterprises included *The Times Atlas*, 1895; the *History of the South African War*, 1900-9; and *The Times Book Club*, 1905. In 1908 he became managing director of the reconstructed *Times Publishing Company*. See F. H. Kitchin, *Moberly Bell and his Times*, 1925; E. C. H. Moberly Bell, *The Life and Letters of C. F. Moberly Bell*, 1927.

Bell, Clive (b. 1881), Eng. art and literary critic; educated at Marlborough

and Cambridge. His *Since Cézanne*, 1922, and *Landmarks in Nineteenth-century Painting* are contributions to the comparative study of Fr. and other schools of painting. Other works: *Art*, 1914; *Poems*, 1921; *Civilisation*, 1928; *Proust*, 1929; *An Account of French Painting*, 1931; *Enjoying Pictures*, 1934. He became chevalier of the Legion of Honour in 1936.

Bell, Currer, Ellis, and Acton, see BRONTË.

Bell, George Joseph (1770-1843), Scottish jurist, b. near Edinburgh; became member of the Faculty of Advocates, 1791. Pub. works on Scots law; appointed in 1821 prof. of Scots law at Edinburgh, and in 1831 a prin. clerk of session.

Bell, Gertrude Margaret Lowthian (1868-1926), Eng. traveller and archaeologist, b. at Washington Hall, Durham, daughter of Sir Hugh B., ironmaster and colliery owner. Educated at Queen's College, London, and Lady Margaret Hall, Oxford. She learnt Persian with the view of joining her relative, Sir Frank Lascelles, ambas. in Persia, in Teheran, whither she went in 1892. At Teheran she acquired a knowledge of the E. by taking a desert journey in 1900 to Jerusalem and Syria. Later, she took lessons in Arabic and Persian from 2 sheikhs at Haifa. A polyglot by nature, she learned enough Hindustani to find her way about India without an interpreter. In 1905 she continued her Persian studies under Reznach in Paris, and afterwards made her name with *The Desert and the Sown*, pub. in 1907, and *The Thousand and One Churches*, a description of ruins and inscriptions of churches in Lycæonia written in collaboration with Sir William Ramsay. A few years later saw her once more in the E., first in Damascus and then in Bagdad, where she was destined to take a leading part in the administrative development of the new Arab state, Iraq, during its most critical years under the high commissionership of Sir Percy Cox. The knowledge she had acquired of the Arab tribes proved of value during the First World War, and from 1915 she was interpreter of all reports received from central Arabia. Later, in Cairo, she assisted Colonel Lawrence (Lawrence of Arabia) by doing propaganda work for dealing with the revolt in the desert. At Basra she prepared political memoranda and performed staff work under Sir Percy Cox, being appointed assistant political officer at Bagdad. She received the C.B.E. in 1917, and attended the Peace Conference in Paris in 1919. Later in that year she returned to Bagdad, where she was thenceforth known as the Mother of the Faithful, the last woman who bore the name being Ayesha, the wife of the Prophet. In 1926 she completed the arrangement of the Bagdad museum of which she was hon. director of antiquities and was preparing to return home to England, when she d. peacefully in her sleep. She was buried with military honours in the cemetery outside Bagdad. Other publications: *Safar Nameh* or

Persian Pictures, 1894; *Poems from the Divan of Hafiz*, 1897; *Amurath to Amurath*, 1907; *Palace and Mosque at Ukhaidir*, 1914; *Review of the Civil Administration of Mesopotamia*, 1921. *The Letters of Gertrude Bell*, 1927, were ed. by her stepmother, Lady Bell.

Bell, Henry (1767-1830), Scottish marine engineer, one of the originators of steam navigation, *b.* at Torphichen Mill, Linlithgow. Served in a shipbuilding yard at Bo'ness with an engineering firm in London, and in 1790 he settled in Glasgow, but removed in 1807 to Helensburgh, where he studied mechanics. In 1812 the *Comet*, a small vessel 40 ft. long, built under his direction and with an engine constructed by himself, was launched on the Clyde, being the first steam vessel in Europe.

Bell, John (1691-1780), Scottish traveler, commonly called Bell of Antermomy, followed the medical profession. In 1714 he went to St. Petersburg, where he joined an embassy to Persia. Returned to St. Petersburg, where he was appointed to another embassy, this time to Pekin; returned to Moscow, 1722. Of these travels he wrote a most entertaining account. Returned to Scotland c. 1725. Undertook in 1737 another mission for Russia to Constantinople, where he settled as a merchant; married, 1746, and retired to Antermomy. His travels were printed and pub. at Glasgow, 1763.

Bell, John (1763-1820), Scottish anatomist, educated at High School, Edinburgh. Opened, 1790, a private school of anatomy; 1793, pub. the first vol. of his *Anatomy*; next *Discourse on the Nature and Cure of Wounds*; *Principles of Surgery*, 1801-8. *D.* of dropsy at Rome.

Bell, John (1811-95), Eng. sculptor, *b.* at Hopton, Suffolk. Statues by him of Lord Falkland and Sir Robert Walpole were commissioned for the Houses of Parliament. The memorial to the guards who fell in the Crimea is also by B.

Bell, John (1745-1831), Eng. publisher. Defying the combination of London publishers who brought out Johnson's ed. of the poets, B. pub. the *British Poets* in Bell's Edition, giving the chief poets from Chaucer to Churchill with the exception of a few that were copyrighted. B. was the first publisher to discontinue the use of the long *f* (s). He was one of the founders of the *Morning Post*, and proprietor of *Bell's Weekly Messenger*, and of the sporting paper *Bell's Life in London* (see EGAN, PIERCE).

Bell, Sir Joseph (1837-1911), Scottish surgeon. He was appointed consulting surgeon to the Royal infirmary and Royal Hospital for Sick Children, Edinburgh, and editor of the *Edinburgh Medical Journal*, 1873-96. His publications are: *Manual of Surgical Operations and Notes on Surgery for Nurses*. He was the prototype of Sir A. Conan Doyle's celebrated detective, Sherlock Holmes.

Bell, Robert (1800-67), Irish journalist, *b.* at Cork on Jan. 16; educated at Trinity College, Dublin, where with others he founded the Dublin Historical Society. In 1828 he became editor of the *Atlas* in

London. The best known of his works are a *History of Russia*, 3 vols., 1836-38; *Lives of the English Poets*, 2 vols., 1839; and a *Life of George Canning*, 1846.

Bell, Robert (1841-1917), Canadian geologist, *b.* at Toronto. He made topographical and geological surveys in nearly all parts of Canada; was medical officer, naturalist, and geologist to the *Neptune*, *Albert*, and *Diana* expeditions, 1884-97, and surveyed many rivers and lakes of the dominion. He pub. upwards of 200 reports and papers—mostly on geological, biological, and geographical subjects—together with folklore.

Bell, Robert Anning (1863-1933), Eng. artist and designer, *b.* in London; educated at Univ. College School. His illustrations for books are notable, as also his stained-glass designs. Designed the mosaic panels in the Houses of Parliament and in Westminster Cathedral. A.R.A., 1914; R.A., 1922.

Bell, Robert Charles (1806-72), Scottish engraver, *b.* at Edinburgh. His largest work was an engraving of 'The Battle of Prestonpans,' after Sir William Allan. Between the years 1850 and 1872 a number of his best plates appeared in the *Art Journal*.

Bell, Thomas (1792-1880), Eng. zoologist, *b.* at Poole in Dorsetshire. He was appointed prof. of zoology at King's College in 1836. In 1828 B. was elected F.R.S., and from 1853 to 1861 was president of the Linnean Society. Among his works are *A History of British Stalk-eyed Crustacea*, 1853; *A History of British Quadrupeds, including the Cetacea*, 1837; and *A History of British Reptiles*, 1839.

Bell, Book, and Candle. Form of excommunication in the Church of Rome, in which an ecclesiastic, after pronouncing his malediction, closes his book, throws a lighted candle to the ground, and tells the bell as for the dead. The symbolic significance of the first 2 actions is that the anathematised person is removed from the book of life, and his soul is cast from the sight of God as the candle from the sight of men.

Bella, tn. in the prov. of Potenza, Italy, 16 m. S.S.W. of Meli. Pop. 4000.

Bella, Stefano della (1610-64), It. etcher, *b.* at Florence. His etchings, which reached a high standard, probably number about 15,000.

Bellac, cap. of an arron. in the dept. of Haute-Vienne, France. Pop. commune, 4000.

Belladonna (*Atropa B.*), dwale or deadly nightshade, perennial plant of the order Solanaceae. See NIGHTSHADE. For the B. Lily, see AMARYLLIS.

Belladonna Lily (*Amaryllis B.*), plant of the order Amaryllidaceae, the single species of its genus; native of Cape Prov. It is devoid of a corona, and is zygomorphic, in which it differs from its allies, the daffodil and snowdrop.

Bellagio, vil. of Italy, beautifully situated on the promontory dividing the 2 arms of Lake Como. Pop. of com. about 4000.

Bellahouston, eccles. par. of Lanarkshire, Scotland, 2 m. S.W. of Glasgow, of which it forms a suburb. Pop. 12,000.

Bellaire, city in Belmont co., Ohio, U.S.A., on the Ohio R., and a shipping centre for the Belmont co. coalfield. Its manufs. are glass, agric. machinery, pig-iron. Beds of coal, limestone, and fire-clay are in the neighbourhood. Pop. 14,000.

Bellamy, Edward (1850-98), Amer. social reformer and author, *b.* at Chicopee Falls, Massachusetts, U.S.A. He studied at New York and Germany. He attracted attention by *Looking Backward, 2000-1887*, in which book he pictured life under socialistic conditions. In 1897 *Equality*, sequel to *Looking Backward*, was pub.

Bellamy, George Anne (c. 1727-88), Eng. actress, the illegitimate daughter of Lord Tyrnawley; educated at a Fr. convent. She lived with her mother in London, and associated with Mrs. Woffington and Garrick. She became a famous actress, and, till 1770, played in London, Edinburgh, and Dublin. Her extravagance and licence, which were as renowned as her career was brilliant, caused her sorrow and poverty in her later years. Released from the debtors' prison in 1785, she pub. her *Apology*.

Bellamy, Jacobus (1757-86), Dutch poet, *b.* at Flushing of poor parents. His first verses expressed his love for his native country. Aided by wealthy admirers, he went to Utrecht, with the intention of studying divinity. These studies, however, he soon left for the pursuits of poetry and general literature. He ranks among the first poets of his nation and the restorers of Dutch poetry.

Bellarmino, Robert (Roberto Francesco Romolo Bellarmino) (1542-1621), It. prelate, *b.* in Tuscany. He entered the order of Jesuits in 1560; was ordained priest at Ghent by Jasenius in 1569, and elected prof. of theology at the univ. of Louvain in the year after; having filled this chair for 7 years he went to Rome in 1576; created cardinal, 1599; archbishop of Capua, 1561-65. He then became chief theological adviser to the pope. A model of Christian asceticism, and one of the greatest theologians, especially in polemics, that the Romish Church ever had. Among his most important works are his *Disputationes de Controversiis Christianae Fidei*, 3 vols., 1581, 1582, 1583; *De Potestate Summi Pontificis*, and *De Scripturis Ecclesiasticis*. See J. Brodrick, *The Life and Work of Blessed Robert Bellarmine*, 2 vols., 1928.

Bellary, dist. and tn. in the Madras presidency, India. The tn. is 300 m. from Madras by rail, and was formerly a military station. The fort, built on a bare granite rock, rises abruptly from the plain to the height of 450 ft. A high point opposite it is called the Copper Mountain; Hyder Ali is said to have worked it, but found the expense exceeded the profit. Much iron ore is found. Cotton and woollen goods are manufactured and cotton largely exported. Pop. dist. 863,000; tn. 43,000.

Bellasis, Edward (1800-73), Eng. serjeant-at-law. He was educated at Christ's Hospital, and was called to the Bar in 1824. He became serjeant-at-law in

1844. From 1833 to 1845 he was interested in the Oxford Movement, and became acquainted intimately with Newman, Pusey, Ward, and Manning. He left an interesting autobiography and a number of theological treatises, besides taking a prominent part in the controversy aroused by the bull of Pius IX. in 1850.

Bellatrix (Orionis). White star of the second magnitude in the left shoulder of Orion.

Bellay, Joachim du, *see* DU BELLAY.

Bell-bird, the name given to sev. birds on account of their notes, but applied in particular to the Brazilian campanero, a species of Cotingidae. It is a white, frugivorous bird, and is noted for a long black fleshy appendage dotted with feathers which hangs from its forehead. When the bird utters its cry this caruncle becomes elongated.

Bell-Casting, *see* under BELL.

Belle Alliance, name of a farm, was the centre of the position of Napoleon's army at the battle of Waterloo. It lies 13 m. S. of Brussels. Wellington and Blücher met here. The battle of Waterloo, and subsequent victory, has been spoken of as the B. A. by the Prussians.

Belleau, Remi (c. 1528-77), Fr. poet, member of the Pléiade (*q.v.* and *see also* RONSARD). *B.* at Nogent-le-Rotrou. Tutor to Charles, marquis d'Elbeuf, who, under B.'s tuition, became a noted patron of the muses. Produced the first Fr. translation of Anacreon, but first achieved celebrity by his commentaries to Ronsard's *Amours*. His chief work, however, is *La Bergerie*, a prose and verse pastoral in imitation of Sannazaro. His *Airil* is a stock item in Fr. anthologies. *See* Gouverneur's ed. of Remi Belleau, pub. by Janner (3 vols.), 1867.

Belleau Wood, forest to the N.W. of Château-Thierry in France. The battle in this sector is now famous in the Amer. annals of the First World War. At Château-Thierry Amer. troops took a large share in preventing the Gers. from advancing across the Marne towards Paris in May-June 1918. As a continuation and part of that battle came the intense fighting in Belleau Wood, where the offensive was undertaken by the 2nd Div. of the Amer. Expeditionary Force. This was largely made up of the U.S.A. Marines and of regiments from the regular U.S.A. Army. After nearly 3 weeks of intensive fighting, the Amers. cleared the Gers. and their machine-gun nests out of the forest, and not only held it, but also the little tn. of Vaux. The severity of the contest is marked by the fact that the Amers. lost in killed alone 285 officers and nearly 8000 men.

Belleek, par. and vil. with railway station, co. Fermanagh, N. Ireland, on the R. Erne. It has given its name to Belleek china which is made there. Pop. par. 1300, vil. 200.

Bellefontaine, tn. of Logan co., Ohio, U.S.A., 49 m. N.W. of Columbus. Pop. 9800.

Bellegarde: (1) Fortress, situated on a peak, 1380 ft. above the sea, in the dept. of Pyrénées-Orientales, France, on the

Sp. border, 17 m. S. of Perpignan. Philip III. of France was defeated in the neighbourhood by Peter III. of Aragon (1285). The fortress was captured by the Spaniards in 1793, but was retaken, 1794. (2) Tn. in the dept. of Ain, France, on the Swiss border. Pop. 5000.

Belle-Ile-en-Mer, is. of France, dept. of Morbihan, in the Atlantic Ocean, 8 m. S. of Quiberon Point. Its length is nearly 12 m. and its greatest breadth about 7 m. The chief industry is pilchard and sardine fishing; fine draught-horses are reared; and the soil is fertile and well cultivated. Admiral Hawke defeated the Fr. fleet under Conflans off the coast in 1759; the is. was captured by the Eng. in 1761, but restored to France 2 years later. The chief tn. is Le Palais. Pop. 6000.

Belle Isle: (1) Is. in the Atlantic, lying between Newfoundland and Labrador, about 15 m. from either coast. Area, about 15 sq. m. There is a lighthouse, 470 ft. high, visible at a distance of 28 m. The true breed of Newfoundland dogs originated in this is. (2) Is. in Conception Bay, near the S.E. extremity of Newfoundland. It is about 6 m. long by 3 m. broad. The soil is fertile, and there are rich deposits of hematite iron ore. The cliffs are rocky and imposing, some standing 400 ft. high. Pop. 1500.

Belle Isle, Strait of, channel between Newfoundland and Labrador, forming an entrance to the gulf of St. Lawrence from the Atlantic Ocean; it is the main route from Great Britain to the St. Lawrence R., but during the winter months it is blocked with ice. It is about 80 m. in length, the breadth varying from 10 to 18 m.

Belle-Isle, Charles Louis Auguste Fouquet (1684-1761), Fr. marshal, a grandson of the intendant Fouquet, b. at Villefranche. After distinguishing himself in the wars of the Sp. Succession, he was made governor of Metz and a marshal of France. He, with Broglie, had command of the forces in the war of the Austrian Succession, and stormed Prague in 1741. In the year following he led the brilliant retreat to Eger. He became minister of war in 1758.

Belleme, or **Bellesme**, tn. in the dept. of Orne, France. It was besieged in 1228 by the army of Louis IX. of France. To the N. is the small forest of B., where there are some mineral springs. Pop. 2000.

Belleme, Robert, Earl of Shrewsbury, Anglo-Norman noble, knighted by William the Conqueror in 1073. During Rufus's reign he became the most powerful lord in the realm. In 1102 he lost his Eng. estates and returned to Normandy. He d. in prison, where he had been incarcerated by Henry II.

Bellenden, John (fl. 1533-87), Scottish poet; became canon of Ross and archdeacon of Moray. Trans. Livy, and also Boece's *Historia Scotorum* into Scottish vernacular.

Bellenden, Sir John (d. 1577), Scottish courtier, eldest son of Sir Thomas Bellenden of Auchinvoile. In 1547 he was made a lord of session by the queen regent.

In 1551 Mary Queen of Scots appointed him one of her privy council, and he was supposed to be implicated in the murder of the queen's favourite, Rizzio; he fled from Edinburgh, but was soon restored to favour, and supported the queen's marriage with Bothwell.

Bellenden, William, Scottish classical scholar, and writer on Cicero, who fl. in the early part of the seventeenth century. He held a chair at the univ. of Paris, and was favoured by James I. of England.

Bellerophon, genus of fossil gasteropod mollusca, which is the typical genus of the family Bellerophonitidae. The species occurs in the Paleozoic formations.

Bellerophon, son of Glaucus, king of Corinth, and Eurymede (Homer, *Iliad*, vi.). His name was changed to B. from Hipponous, after having killed Bellerus by accident. He was sent to Proetus, king of Argos, and unwittingly won the love of Antea, wife of Proetus. He spurned her advances, whereupon she sought to turn her husband against him. Proetus sent him to Iobates, king of Lycia, with sealed instructions to put B. to death. Iobates was unwilling to kill him directly, so imposed upon him the almost impossible task of killing the monster Chimæra. But by the aid of Pallas, who gave him the winged horse Pegasus, he succeeded in slaying the monster. He defeated the Amazons, and cut down the Lycian ambuscade, which Iobates had set to kill him. Thereupon the king ceased to attempt his death and gave him his daughter Philonoe in marriage. His story is re-told by Wm. Morris in *The Earthly Paradise*.

Belles Lettres, term borrowed by the Eng. and other languages from the Fr., signifying any writing of a refined or elegant character, but more particularly applied to essays, poetry, and criticism.

Bellet Strait, sea channel between N. Somerset Is. and Boothia Felix, N. Canada; discovered by Joseph B.

Belleville: (1) Formerly a suburb, now the E. quarter, of Paris. (2) Tn. of Essex co., New Jersey, U.S.A., 3½ m. N.E. of Newark. Pop. 28,160. (3) Co. seat of St. Clare, Illinois, U.S.A., 15 m. S.E. of St. Louis. There are large flour mills, and manufs. of heavy iron goods. Coal is found in the dist. Pop. 28,400. (4) Tn. in Ontario, Canada, on the bay of Quinte and the Moira R. The Albert Univ. was founded here in 1857. Pop. 15,000.

Bellevue, tn. in Campbell co., Kentucky, U.S.A., near Newport. Pop. 10,000.

Bellw, Harold Kyrie (1857-1911), Eng. actor, b. at Prescott, Lancashire; entered the navy, and later went to Australia, where he first appeared on the stage in 1874. In 1878 he joined Henry Irving's company at the Lyceum, and in 1879 Maria Litton's at the Imperial. Later, he formed a touring company with Mrs. Brown-Potter. The partnership broke up in 1898, when he appeared successively at the Criterion and Lyceum.

Bellewaarde Lake, lake in the W. of Flanders, Belgium, the scene of much fighting in the successive battles of Ypres in the First World War.

Belley, tn. in the dept. of Ain, France, 44 m. E. of Lyons. It is the seat of a bishopric, and has a cathedral dating from A.D. 889, and the ruins of an anct. Rom. temple. Lithographic stone is quarried in the neighbourhood. Pop. 5000.

Bell-flower, name applied to different species of Campanula (*q.v.*).

Belli, Giuseppe Gioachino (1791-1863), It. poet, b. at Rome. Most of his poetry is written in the Rom. dialect. See *1 sonnetti romaneschi* (1886-89), ed. by Morandi.

Belligerents, Rights and Duties of. The conduct of war involves the relations first between the 2 parties engaged in the war, the B., and secondly between either or both those parties and neutrals. (*See NEUTRALITY and CONTRABAND.*) By the articles of The Hague Convention, 1907, the armed forces of the B. must alone carry on the war, and to them alone do the rights, duties, and laws of war apply; besides the regular army, militia or volunteer forces may be regarded as B. troops, and not as mere marauders, only if they are commanded by someone responsible for his men's acts, carry emblems distinctive and recognisable at a distance, carry arms openly, and conduct war in accordance with accepted laws and customs. The last 2 conditions will suffice when the population of an invaded country take up arms and have not time to organise under the other conditions. Enemy's property on land, where it belongs to the state, can be seized by an army of occupation; also all appliances for transmission of news, persons, or goods, and munitions of war belonging to private persons can be seized, but must be returned with compensation after peace. Requisitions in kind or services on private persons can only be made for the necessities of the army, and paid for or receipts given, to be paid afterwards. Private property on land is not immune in war. On sea, enemy's private property is still liable to capture and confiscation. It is forbidden to use poison or poisoned arms; to kill or wound persons belonging to the enemy's nation or forces treacherously, or those who have surrendered at discretion; to declare 'no quarter' shall be given; to use arms or projectiles, etc., which will cause superfluous injury; improper use of flags of truce, enemy's flags or uniforms, or red-cross badges; bombardment of undefended places or dwellings, except on a refusal after formal summons to furnish supplies requisitioned; destruction and seizure of property except when urgently necessary for purposes of war; pillage of a tn. or place, even if taken by assault. Prisoners of war must be treated humanely; they are in the power of the enemy's gov., not of those that took them; they may be confined, but only as a measure of necessity; they may be authorised to work, but not for any purpose of the war; they are treated on the same footing as the soldiers of their captors in respect of food, etc. Escaped prisoners are subject to punishment if caught before rejoining their own army or

before leaving the country occupied by their captors; if captured a second time after escaping successfully, they are not liable to punishment for first escape. A prisoner released on parole and recaptured bearing arms forfeits his rights as a prisoner of war. For treatment of sick and wounded in war *see* GENEVA CONVENTION; it may be noted that The Hague Convention, 1907, drew up rules on the lines of the Geneva Convention for the treatment and conduct of hospital ships and of sick and wounded in naval warfare. Although the great powers had been formulating international law for the half century before the First World War no opportunity had occurred for testing the various agreements reached, and finding out by actual experience their working value. One feature of the First World War was the invention and use of new weapons (*e.g.* tanks), yet no international agreement was reached adapting the use of them to the general principles of international law already estab. The blockade of Germany caused Great Britain to declare by proclamation that she attached enemy character to companies wherever incorporated, carrying on business in enemy country. Direct trading with the enemy was forbidden, but this did not prevent indirect trading via neutrals, and in order to stop this the 'Trading with the Enemy (Extension of Powers) Act, 1915' prohibited persons resident in United Kingdom from trading with persons in neutral countries likely to have association with the enemy. Internment of enemy subjects was dealt with variously in practice. Great Britain, France, Italy, and U.S.A. gave enemy subjects a certain time to leave their ter., but Germany and Austria detained all enemy subjects at the outset, but later released those not of military age. Enemy subjects allowed to remain in B. states were also treated variously; in Great Britain, France, and Germany they were interned; in the U.S.A. they had a fair measure of freedom, and in Japan no restrictions were imposed. The Hague Conference in 1907 agreed that merchant ships in enemy ports should be given some days' grace to clear from those ports, but Article 6 provided that the convention should only be applicable to a war in which all the belligerents were parties to it. Neither Italy, Serbia, nor U.S.A. came within this category. Germany offered days of grace to Great Britain, who replied with a counter-offer, to which no reply was received. The term 'merchant ships' in the convention was also debated. Great Britain held that it did not apply to tugs and lighters used in a port nor to pleasure yachts, but Germany adopted the opposite view. The distinction between armed forces and the civil pop. is now disappearing owing to (a) the organised employment of a nation's manpower, (b) the employment of aircraft for bombing civilians as well as troops, (c) the inability of democratic govts. to conduct war without the active support of the electorate they represent, (d) the importance of conducting an economic war

against the enemy. The use of poisonous gas was forbidden by The Hague rules, but Germany first used it, to which the Entente was compelled to retaliate in kind. Under the Washington Treaty, 1922, Great Britain, France, Italy, Japan, and U.S.A. agreed not to use any kind of gas, but this treaty is no longer operative. It was hoped, through the League of Nations, to postpone recourse to war in disputes between nations by the procedure under the Covenant of the League. Under the Covenant (*q.v.*) the members of the League agreed 'that if there should arise between them any dispute likely to lead to a rupture, they will submit the matter either to arbitration or to inquiry by the Council, and . . . in no case resort to arms until 3 months after an award has been made by the arbitrators or a report has been made by the Council.' This procedure was intended to delay the opening of hostilities, and permit of the dispute being considered by a third party. But the arbitrary action of the 'totalitarian' powers as illustrated by the Jap. invasion of China, the It. invasion of Abyssinia, and the Ger. seizure of Austria and Czechoslovakia went far to destroy this hope even before the outbreak of the World War in 1939. The events of the war weakened the validity of much international law in so far as it concerned the rights of belligerents. Nevertheless, the Hague Conventions retained an authority on which could be based much of the prosecution of the war criminals at the trials conducted at Nuremberg in 1946. Even the defence had recourse to them. For instance, according to the evidence of Keitel (former chief of staff of the Ger. army), Hitler gave Himmler plenary powers as Reichsführer of the S.S. so as to enable him to become a factor in the direction of the war against Russia by the side of the *Wehrmacht* on the 'legal thesis' that the Soviet Gov. had not ratified either the Hague rule of land warfare or the Geneva Convention (*q.v.*), and had thus knowingly and willingly exempted themselves from the rules of international law.

Bellincioni, Gemma, It. soprano singer, b. at Monza, Aug. 17, 1861. She is remembered particularly for her interpretations of Santuzza in *Cavalleria Rusticana*, of Violetta in *La Traviata*, and of Salome in Strauss's opera. She began by playing light and comic parts. Tambrlik, the tenor, noticing her ability, engaged her to tour with him abroad. Also estab. herself as an actress in stage plays, the *Dame aux Camélias* being one of her most marked successes. Pub. *Io e il Palcoscenico* (Myself and the Stage). Milan, 1920.

Bellingham: (1) Vil. of Northumberland, England, on the l. b. of the R. Tyne. The church dates from the thirteenth century, and has a finely groined roof. Cairns and Druidical stones are found in the neighbourhood. Beds of coal and ironstone are worked. Pop. 1500. (2) City of Whatcom co., Washington, U.S.A., on B. Bay, 96 m. N. of Seattle; an important shipping centre. Prin. industries: saw-milling, salmon canning;

manufs., tin cans and machinery. Pop. 29,300. (3) Dist. in the bor. of Lewisham, London, England, 9 m. from the City by railway. The L.C.C. has a housing estate there.

Bellingshausen, Fabian Gottlieb von (1778-1852), Russian naval officer and explorer, b. in Oesel Is., Livonia. Entered Russian navy in 1797. In 1803 he circumnavigated the world, and, later, led a Russian expedition to the Antarctic, reaching as far S. as 70° S. lat. He was present at the battle of Varna, 1828.



Anderson

GIOVANNI BELLINI

Self-portrait in the Uffizi Gallery, Florence.

Bellingshausen Sea, portion of the Antarctic Ocean, S.W. of Drake Strait and W. of Graham Land. It is named after the Russian explorer (*q.v.*).

Bellini, Gentile (1421-1501), It. painter, eldest son of Jacopo B., was b. at Venice. Two of his prin. works are the 'Histories of the Holy Cross' at San Giovanni, and the 'Preaching of St. Mark' at the college of that saint. Some of B.'s pictures were taken to Constantinople, and Mohammed II., sent an invitation to the artist to his court. This proposal was accepted by B. He was courteously received by the sultan, who sat to him for his portrait, and commissioned him to paint various historical works. Among them was the subject of the 'Decollation of St. John'; this picture was admired by Mohammed, who pointed out, nevertheless, some inaccuracy in the marking of the discoloured neck; and, in order to prove the justice of his criticism, he ordered the head of a slave to be struck off in the presence of the artist. From this moment B. never enjoyed an hour's tranquillity until he had obtained leave to return to Venice. Mohammed dismissed him with marks of favour, placing

a gold chain round his neck and giving him letters to the Venetian senate expressive of his satisfaction. He was engaged in various public works after his return to Venice, for which he was requited by the republic with an honourable pension for life and the order of St. Mark.

Bellini, Giovanni (1422-1512), It. painter, the son of Jacopo and the brother of Gentile B., b. at Venice. He contributed perhaps more than any painter of his time to emancipate art from the dry Gothic manner of his predecessors. Giovanni ornamented the public edifices and churches of Venice and other cities of Italy with a prodigious number of paintings, and continued his labours to a very advanced age. Some of his small pictures are in England; but it is only by his large works in Italy that an adequate idea of his power can be formed. See Roger Fry, *Giovanni Bellini*, 1899.

Bellini, Jacopo, It. painter, b. in Venice, was one of the earliest artists in oil painting, and his works have considerable merit, considering the age in which they were executed. He painted portraits and frescoes. A few of his works survive, but his manner is best judged from the book of his sketches, which is in the Brit. Museum. He is better known as the father of Gentile and Giovanni B. He d. in 1470.

Bellini, Laurentio (1643-1704), It. physician, b. at Florence. After receiving in his native place the elements of a classical education, he proceeded to Pisa, where he made such progress in his studies that, when only 20 years of age, he was appointed prof. of philosophy. He continued to teach anatomy and to practise medicine at Pisa, with great success, for 30 years, when he was invited to Florence and made chief physician to the Grand Duke Cosimo III. His best work is the treatise *Gustus Organum novissime deprehensum* (Bologna, 1665), in which he pointed out the papillae of the tongue to be the essential organ of taste. His works were collected and pub. in 2 vols. (Venice, 1708, reprinted 1732).

Bellini, Vincenzo (1801-35), It. operatic composer, b. at Catania, Sicily, and descended from a family of musicians. Entered the Neapolitan conservatoire, studying under Zingarelli. Wrote a cantata and some masses. His first succeeded by *La Straniera*, at the same opera, *Adelson e Salvini*, was performed in 1824 at an obscure theatre in Naples, but his second, *Bianca e Fernando*, produced in 1826 at the San Carlo, Naples, made his name. The following year he wrote *Il Pirata* for the Scala at Milan; and this was theatre. To lovers of modern It. music the most familiar of B.'s operas are *I Montecchi e Capuleti* (1829), in which the part of Romeo had been a favourite of the great contraltos of the previous six or more decades; *La Sonnambula* (1831); *Norma*, his best and most popular work (1832); and *I Puritani*, written for the It. opera in Paris and influenced to some extent by Fr. music. Received a commission to write an opera for the national grand opera, Paris, but while studying

verse and cadence for this work he was seized with a sudden and fatal illness. He wrote flowing melody, and gave the voice every opportunity to reveal its natural charm and its acquired technique. His popularity in Paris and elsewhere was enormous.

Bellinzona, cap. of the canton of Ticino or Tessin, Switzerland, 8 m. E.N.E. of the head of Lago Maggiore, situated at an elevation of 775 ft., commanding the St. Gotthard route. It has 3 old castles and railway repair shops. Pop. 10,000.

Bellis, a genus of herbaceous plants of the order Composite. See DAISY.

Bellman, Karl Mikael (1740-95), Swedish poet, b. at Stockholm. He studied at the univ. of Upsala. He was in the civil service, 1758-c. 1764, in commerce, 1764-1772. Later he was enabled to devote himself entirely to poetry and literature by the liberality of Gustavus III., who appointed him to a nominal office, with the title of secretary of the court. As early as 1757 he pub. a book of verse, a trans. of *Evangelical Thoughts of Death* by Schweidnitz, and in the next few years many poems in the style of Dalin. *The Moon*, a satirical poem, appeared in 1760. His chief work consists of the dithyrambic collection of odes entitled *Fredman's Epistles and Fredman's Songs*, written between 1765 and 1780, and pub. in 1790.

Bell-metal, an alloy, composed of a mixture of copper and tin, used for making bells. There is from 18 per cent to 30 per cent tin, with 80 per cent to 70 per cent copper, the proportion of tin being larger in the case of small bells. See also ALLOY.

Bello, Francesco (c. 1450-1505), It. epic poet, known as Ciccio da Ferrara on account of his blindness. Lived in great poverty at Mantua and Ferrara. His *Manbrino* (45 cantos), dealing with the romantic and chivalrous adventures of an oriental potentate, had a considerable influence on Ariosto's *Orlando Furioso*.

Bello, Horizonte, cap. of the state of Minas Geraes, Brazil; formerly (before 1897) called Curral del Rey. The neighbourhood produces gold, manganese, and iron, coffee, grapes, maize, etc. It was the scene of fighting in the Civil war of 1930. Pop. 168,000.

Belloc, Joseph Hilaire Pierre, Eng. poet, essayist, and historian, b. at La Celle, Saint-Cloud, July 27, 1870; son of Louis Swanton Belloc, advocate. He was, as a Rom. Catholic, educated at the Oratory School, Edgbaston. After a brilliant career at Oxford, where he took first-class honours in hist., he served for some years in a Fr. artillery regiment. He became a naturalised Brit. subject in 1902. In 1906 he was elected M.P. for S. Salford as a Liberal. Becoming disillusioned with Eng. politics, he retired from Parliament, 1910; and, in conjunction with Cecil Chesterton, estab. (1911) the *Eye-Witness*—afterwards the *New Witness*. His numerous writings range from political pamphleteering to works of serious historical study, and although his reputation may be said to be mainly that of a historian, his name is also estab. as a poet.

and essayist. In addition, he has written some 16 novels, nearly all of which were illustrated by G. K. Chesterton. As an essayist he has an engaging style, and the easy variety of his choice of subject is shown in *Hills and the Sea* (1906) *On Nothing* (1908), *On Everything* (1909), *On Something* (1911), *This and That and the Other* (1913). Sev. other vols. of essays followed, among which may be mentioned *Essays of a Catholic Layman in England* (1931). His historical and biographical works are written from the point of view of a Catholic controversialist, and he looks at Eng. hist. in particular with the eye of a continental writer. His major historical works are as follows: *History of England, 1688-1910* (vol. xi. of Lingard's *History*) (1914); *The Last Days of the French Monarchy* (1916); *Europe and the Faith* (1920); *The Campaign of 1812 and the Retreat from Moscow* (1924); *A History of England, 4 vols.* (1925-31); *Six British Battles* (1931); *The Tactics and Strategy of the Great Duke of Marlborough* (1933); *A Shorter History of England* (1934); *Monarchy: A Study of Louis XIV.* (1938). B.'s biographical writings include studies and lives of Danton (1899), Robespierre (1901), Marie Antoinette (1903), James II. (1928), Joan of Arc (1929), Richelieu (1929), Wolsey (1930), Cromwell (1931), Napoleon (1932), Charles I. (1933), William the Conqueror (1933), Cromwell (1934), and Milton (1935). He also wrote a number of books which sprang from his enthusiasm for travel and his love of places. They include *The Historic Thames* (1907), *The Stane Street* (1913), and *The Cruise of the 'Nona'* (1925); and the same spirit animates many of his essays, while the best known of his books, *The Path to Rome* (1902), is the story of a journey by road from the N. of France through Switzerland to Rome. Among his writings on contemporary politics, *The Party System* (1911) with Cecil Chesterton and *The Serrile State* (1912) should be mentioned, and in a lighter vein *But Soft—we are observed!* (1928). His first financial success was in the different field of books for children with *The Bad Child's Book of Beasts* (1896), followed by *More Beasts for Worse Children* (1897), *Cautionary Tales for Children* (1908), and *New Cautionary Tales* (1930). B. also ranks high as a poet of both serious and light verse, and vols. of his poetry were pub. in 1896, 1910, 1911, 1923, also *The Chanty of Nona* (1928), and *Ladies and Gentlemen* (1932); *The Last Lady* (1940).

Belloc Lowndes, Marie Adelaide, Mrs. (c. 1868-1947), Eng. novelist; only daughter of Louis Belloc and sister of Hilaire B. Educated at Mayfield convent, Sussex; married, 1896, Frederick Savrey Lowndes. Her novel, *The Heart of Penelope*, was pub. in 1904, and after that she wrote a considerable number of novels, which estab. her reputation as a teller of stories with exciting incident combined with psychological interest. Among the best known are *Barbara Rebell* (1905) and *The Lodger* (1913), the latter being trans. into a number of

foreign languages. Her play, *With All John's Love*, was produced in 1932, and was followed by 2 other plays. She is also the author of 3 vols. of memoirs, *I too have lived in Arcadia* (1941), *Where Love and Friendship dwell* (1943), and *The Merry Wives of Westminster* (1946).

Bellona, the goddess of war among the Romans, the sister or wife of Mars. During the Samnite war (296 B.C.) Appius Claudius vowed to dedicate a temple to her, and it was afterwards erected (293 B.C.) in the Campus Martius.

Bellot, Joseph René (1826-53), Fr. naval officer and Arctic explorer, b. in Paris. He won the cross of the Legion of Honour in the Fr. expedition against Tanatavo in 1845. In 1851 he joined the party in search of Sir John Franklin. In Mar. 1853 he was killed while on the expedition under Captain Inglefield. An obelisk at Greenwich commemorates him.

Bellows, see BLOWING-MACHINES.

Bellows, Albert F. (1829-83), Amer. landscape painter, b. at Milford, Massachusetts, studied and painted in France, Belgium, and England. His early work was in oils, but later he turned to water-colour. Among his works are 'Afternoon in Surrey', 1868; 'Sunday in Devonshire', 1876.

Bellows-fish, see under CENTRISCUS.

Belloy, Dormont de (real name Pierre Laurent Buiette) (1727-75), Fr. dramatist and actor, b. at Saint-Flour in Auvergne. He was intended for the legal profession, but he preferred the stage. He played principally at St. Petersburg. His tragedy, *Tibris*, which was introduced in France in 1758, was a failure, and thus disappointed B. returned to Russia. His next play, *Zelmire*, in 1762, and *Le Siège de Calais*, in 1765, were successful when produced in Paris. He was mainly responsible for the innovation of having Frenchmen as heroes of plays, rather than figures from classical hist. and legend.

Bell Pepper, see GUINEA PEPPER.

Bell Rock, or Inchcape Rock, reef off the E. coast of Scotland, at the opening of the bay formed by the Red Head in Forfarshire and Fifeshire, nearly opposite the mouth of the Tay. It is nearly 12 m. S.E. of Arbroath, and is about 2000 ft. long. A lighthouse, 120 ft. high, designed by Robert Stevenson and Rennie, was erected in 1807-11; a new light-room was built in 1902. The old tradition of the bell hung on a tree by the abbot of Aberbrothock (Arbroath), is celebrated in Southey's ballad, *The Inchcape Rock*. Consult Campbell, *Notes on the Bell Rock*, 1904.

Bells, nautical term, used in describing the time. A day on board ship is divided into watches of 4 hours each. Every watch is marked off into half-hours by the ringing of a bell, the strokes of which depend on the number of half-hours that have elapsed during the watch. Thus, 'two bells', marked by a double stroke, shows that one hour of the watch has expired.

Bellshill, tn. of Lanarkshire, Scotland, 3 m. N. of Hamilton, in the mining dist. Pop. 17,000.

Belluno, prov. in Venetia, Italy; area 1293 sq. m. The country is mountainous, and there are extensive forests. The chief riv. is the Piave, which rises in the Alps and flows into the gulf of Venice. The vine and fruit-trees grow on the lower hills and in the valleys, and there is good pasturage. Pop. 233,580. The cap. is B., an episcopal city, standing on the r. b. of the Piave 51 m. N. of Venice. The cathedral belongs to the Renaissance period, and is in the Palladian style. The prin. manufs. are silk and wax, and there is also considerable trade in timber and fruit. The tn. is the Rom. Bellunum. Marshal Victor-Perrin took from it his title of duke of B. Pop., com., 27,000.

Belluno, Duke of, *see* VICTOR-PERRIN.

Bell-wort, Lindley's Eng. name for the order of plants called Campanulaceae (q.v.).

Belmez, tn. with large coal mines in the prov. of Cordova, Spain, 35 m. N.W. of Cordova. Pop. 10,000.

Beloit, city of Rock co., Wisconsin, U.S.A., on the Rock R., 75 m. S.W. of Milwaukee. B. College was founded in 1846; it is a Presbyterian institution, and accommodates 500 students. Manufs. agric. tools, flour, and paper. Pop. 24,000.

Belon, Pierre, Fr. botanist, *b.* at a hamlet in a par. of the Fr. prov. of Maine about the year 1517. Nothing seems to be known concerning his family. Medicine and botany were his studies at a very early period of his life. He visited Germany, Bohemia, Italy, Greece, Egypt, Palestine, and Asia Minor, and appeared in Paris, after 3 years of absence, in 1550, with an extensive collection, which he arranged, and from which he proceeded to pub. various works. In 1557 he traversed Italy, Savoy, Dauphiné, and Auvergne. In 1564 he was assassinated in the Bois de Boulogne as he was returning to Paris.

Below, Fritz von (1853-1918), Ger. general. He first saw service in the Franco-Ger. war of 1870-71. In 1912 he was appointed to the command of the 21st Army Corps, and at the beginning of the First World War his corps formed part of the Ger. Sixth Army on the W. front. In 1915, however, his corps was transferred to the E. front, where it played a distinguished part against the Russians. He was appointed to the command of the First Army in 1916 and was opposed to the Brit. on the Somme in Nov. of that year. He *d.* in a field hospital on the W. front on Nov. 23.

Below, Otto von (1857-1944), Ger. general. On outbreak of First World War was commanding an infantry div. in E. Prussia. At the battle of Narva he commanded the 1st Reserve Corps against the Russians. In the Masurian winter battle of Feb. 1915 he commanded the Eighth Army, which played a distinguished part in the capture of Lyck. In the summer of 1915 he became commander of the Army of the Niemen. In Oct. 1916 he was sent to the Macedonian front to take command of the operations in that theatre. In 1917 he commanded

a mixed Ger.-Austrian force in Italy, which defeated the Its. at the battle of Caporetto, a defeat which would have had more serious results for the Entente had B. not advanced too far from his transport. In the Ger. offensive of Mar. 1918 B. was in command of the Seventeenth Army during the battle of the Somme. After the armistice B. commanded a force in E. Prussia and retired in 1919.

Belpasso, tn. and prov. of Sicily, 7½ m. N.W. of Catania. It lies on the slope of Etna. Since its destruction by a lava stream in 1669 it has twice been rebuilt. Pop. 10,700.

Belper, mrkt. tn. on the Derwent, 7½ m. from Derby, England. It is noted for its cotton mills, silk and hosiery factories. Seams of coal are worked in the neighbourhood, and there are engineering works and nail factories. Pop. 13,000.

Belphebe (Fr. *belle*, beautiful, and Gk. *Phoebe*, Diana), character in Spenser's *Faerie Queene*. She is sister of Amoret, and in her all the virtues of Queen Elizabeth are set forth.

Belsen, the site of a Ger. concentration camp, 10 m. N.W. of Celle, Hanover. Allied troops stormed their way into it in mid-Apr., 1945. In it all the horrors of Buchenwald (q.v.) were found repeated. There were at one time 10,000 persons in the camp. These included some political prisoners. Some 1500 persons were found to be suffering from typhus and over 1000 from typhoid fever. Sev. Brit. Red Cross relief teams went to the camp on Apr. 22 to tend the sick and starving prisoners. The R.A.M.C. set up hospital wards in charge of army sisters. Horrible sights met the eye. Innumerable emaciated figures were covered with the ulcers of filth and disease. One patient was so emaciated that she appeared to be an aged woman; but her age was only 37. Another woman who looked 'almost human,' yet totally expressionless and with the usual yellow waxen pallor of starvation, also looked incredibly old. Her age was 24. Lying close up against a girl typhus patient were the dead body of a woman and on her other side 8 more huddled corpses. There was no attempt at physical decency in the camp, for there was no sanitation whatever, and the internees were too weak to move out of the over-crowded huts. A medical officer went through another hut which had been nearly cleared. In one corner was a pile of filthy rags and old shoes. He marked with a cross in paint on the forehead those who he thought might live if taken out at once. It was ascertained that 17,000 people were cremated by the Gers. in Mar., before the increasing number of deaths began to 'get out of hand.' Some internees and corpses bore the obvious marks of torture. Josef Kramer, aged 38, the camp commandant, and 29 others were tried by a military court held at Lüneburg, and of these 11, including Kramer, and a young woman of 22, Irma Greso, were, on Nov. 17, 1945, sentenced to death for the torture, whipping, and

shooting of prisoners, and for selecting victims for death by the gas-chamber. The sentences were carried out in the following month.

Belshazzar, the last king of Babylon of the Chaldean dynasty, was the son of Queen Nitocris. He perished 539 or 538 B.C., in the seventeenth year of his reign, in the night when Babylon was stormed by Cyrus whilst the attention of the court was engaged by a splendid festival. It was at this feast that B.'s downfall was foretold by the writing on the wall (Dan. v.). His hist. has been a favourite subject of poets and artists; e.g. the painting of B.'s Feast by Martin and the dramas of Milman and Hannah More, and a poem by Byron.

Beltane, or **Beltein** (Gaelic *bealltainn*, *bealltuinn*), name applied to a Celtic festival, formerly celebrated in Ireland, Scotland, and Cornwall, traces of which still remain in different parts of the Brit. Isles. It was originally a May Day festival, when bonfires were lighted on the hill-tops, sheep were driven through the fire, and, possibly, human sacrifices were made. The name is still used in the Gaelic parts of Scotland for May Day. The popular etymology of the word from Celtic *tiene*, fire, and *Bel*, the Phœnician god of the O.T. is no longer accepted.

Belt Case, *The*, a libel suit brought by Richard Claude Belt, a sculptor, against a former pupil, Sir Charles Bennet Lawes (afterwards Lawes-Wittewronge). Lawes had accused Belt, in *Vanity Fair* and elsewhere, of acknowledging as his own certain pieces of sculpture, which had been executed or finished by other persons. The case, *Belt v. Lawes*, was heard at Westminster before Baron Huddleston, and lasted 43 days, from June 21 till Dec. 28, 1882. The jury decided in Belt's favour, with £5000 damages.

Beltrami, **Eugenio** (1835-1900), It. mathematician, *b.* at Cremona. B. lectured on mathematical physics at the univ. of Rome, and was elected president of the Lincei. His chief contribution to mathematical science resulted from his researches on the so-called non-Euclidian geometry. The formula known as Beltrami's theorem is: 'The centre of a circle circumscribing a triangle is the centre of gravity of the centres of its inscribed and escribed circles.' His most important essay is *Saggio di interpretazione della geometria non-euclidia*.

Beltrami, **Giulio Cesare** (1779-1855), It. traveller, *b.* at Bergamo. He was connected with the Carbonari societies, and in consequence was obliged to leave Italy for America in 1821. He accompanied Major Long on an expedition in 1823, and in the following year he discovered the sources of the R. Mississippi. He pub. a hist. of his journey at New Orleans, *La Découverte des sources du Mississippi*, 1824.

Belts, *The*, straits in Den. which connect the Baltic with the Cattegat. The Great B. separates Zealand and Fünen, and is nearly 40 m. long, from 10 to 15 m. broad, with a depth of from 5 to 20 fathoms. The Little B. divides Fünen

and Slesvig. It is half as wide as the former. At Fredericia it is less than a mile wide. Navigation of the B. is difficult, because of the sandbanks and small low is.

Belts and **Belting**, strips of flexible material passing round from one pulley or drum to another to transmit the motion of a driving shaft to a machine some distance away. They are used chiefly in mills where an engine is used to rotate a shaft running from end to end of the building, pulleys being fixed on the shaft at intervals so that the power may be transmitted to separate machines on one or more floors. The advantages of the system over toothed-wheel gearing are economy of material in spanning a large space, decreased noise and jarring, less damage to machinery through defects in the driving mechanism, and greater immunity from accidents generally. An endless belt is stretched from one pulley to another; if it is an open belt the 2 pulleys rotate in the same direction; if the belt is crossed between the pulleys, the shafts are made to rotate in opposite directions. If there is no slipping of the belt on the pulleys, the velocities of the belt and of the surfaces of the 2 pulleys must all be equal, hence the number of revolutions will be inversely proportional to the diameters of the pulleys. If the driving shaft runs at a constant speed, and it is required to increase or diminish the speed of the driven shaft, speed cones are used. These consist of pulleys of different diameters placed side by side on each shaft, so arranged that a smaller pulley on one shaft is directly opposite a larger pulley on the other, so that the length of belting passing round the pair remains constant. The ratio of numbers of revolutions can thus be altered without tightening or loosening the belt. Suppose the belt be stretched over the pulleys at rest with a tension sufficient to keep the pulley surfaces and the belt well in contact. This tension will initially be uniform throughout the belt. On rotating the driving pulley, friction causes the belt to be carried along with it and the tension increases on the driving side between the 2 pulleys and decreases in that portion of the belt opposite to the driving side. Therefore there is always a slack side and a tight side to a belt, although the average tension remains the same, supposing the belt to be perfectly elastic. As the load on the belt increases the difference in the tensions increases, and also the liability of the belt to slip on the pulley. It has been found that as the slip increases so does the coefficient of friction, so that the belt accommodates itself to heavier working. The best evidence shows, therefore, that there is no fixed coefficient of friction for leather belting, so that the load may be increased without the belt ceasing to drive, though in practice there is a limit when the velocity of slip becomes inconvenient. This may be remedied by tightening the belt, but for safety the greatest tension should never be greater than one-fourth of the strength of the belt at the joint,

and considerations of economy and durability demand that the tension should be usually much less, and the effect of excessive tensions in disturbing the bearings of the shafts should also be taken into account. In considering the speed of belting, it should be noted that part of the tension in the belt is used up in bending the belt over the curve of the pulley. The actual resistance of the belt to curving may be neglected in the case of thin flexible leather or woven belting, but at high speeds centrifugal force tends to reduce the pressure of the belt on the pulley, and it is probable that at about 10,000 ft. per minute for leather belts, the belt tension would be so much reduced that the belt would cease to drive. Belts may be used to drive pulleys which are at right angles to the driving shaft, in which case the belt takes a quarter twist. When 2 pulley shafts are not parallel, whether their directions intersect or not, the belt may be passed round and kept in place by guide-pulleys. The only condition to be observed is that the point at which the belt leaves each pulley must be in the same plane as the next pulley.

Materials. Belts are usually made of leather tanned by oak-bark; the thickness varies from $\frac{3}{8}$ to $\frac{1}{2}$ in. in single belting and twice that amount in double belting. The strength of single belting is from 750 to 1500 lb. per sq. in. of width. Rawhide is sometimes used, and is of considerable strength. The strips of leather are joined by paring down the ends, cementing them together with glue, and lacing or riveting them to make them more secure. It is usual to leave one joint uncemented, so that the belt may be tightened when required. Leather belts are usually run with the flesh side next to the pulley, but in America experiments appear to show that the driving power is greater with the grain or smooth side in contact. Cotton belting has the advantage of being cheaper and stronger than leather, 8-ply cotton belting being found by the manufacturers to be twice as strong as double leather belting. Indiarubber is sometimes used in wet places, where leather is unsuitable, but is easily damaged by contact with oil. Chain belting consists of links of leather strung together on wire pins which are not bent as the belt passes over the pulley.

Pulleys. A belt passing round a conical pulley in motion has a tendency to creep up to the larger end. Pulleys are therefore made with the rims slightly convex, so that the belt remains in the middle of the rim. The arms may be elliptical or segmented in section, and the latter form is usually preferred. They may be straight or curved; the former are stronger and lighter, but are more liable to fracture on cooling. Pulleys are sometimes cast in 2 halves, so that they may be fixed on a shaft without interfering with the shaft bearing. Wrought-iron pulleys are often made with split rims, which are closed up by a screwed-on piece after the pulley is on the shaft. When a belt is thrown off the pulley for repairs or tightening, it

rests mainly on the upper shaft. If this is the driving shaft there is a danger that the belt will be doubled round on itself by the rotation of the shaft and slung round with risk of damage to life or property. This may be obviated by the provision of a light perch above the shaft on which the pulley may hang when unshipped. Allied to systems of belting is the use of rope for gearing. The pulleys are then provided with grooves so shaped that the ropes do not reach the bottom, but are wedged in by the sides, and so give a very effective drive. Cotton ropes are very strong, but hemp and wire are also used. The rope may meet the pulley at an angle, so that the shafts need not be exactly parallel. Another advantage of rope gearing is that many ropes may be run from a driving drum to sev. machines. See W. H. Atherton, *Conveying Machinery*, 1937; *Mechanical Handbook, Yearbook, and Manual* (ann.).

Belts, Jupiter's, see JUPITER.

Belurbet, tn. in co. Cavan, N. Ireland, 8 m. N.W. of Cavan, on the R. Earn. Pop. 1300.

Beluchistan, see BALUCHISTAN.

Beluga, or the white whale, belongs to the family of Dolphins. It is found chiefly round Greenland, but occurs in many parts of the Arctic seas, and occasionally has been seen off Scotland. Its body measures 12 to 16 ft. in length, and is a creamy white colour. Its head is arched, its snout short and rounded, its teeth are few, small, and conical, and it has short flippers. Young whales are at first a bluish-grey. Bs. associate in herds.

Belur, vil. of the Hassan dist. of Mysore, India, which contains a famous temple. Pop. 4000.

Belur-Tagh, see BOLOR-TAGH.

Belus: (1) Name of the chief deity of the Babylonians and Assyrians. (2) In Gk. mythology, the son of Poseidon, and father of Ægyptus and Danaus. He was fabled to have been the founder of Babylon. The patronymic Belides is given to Ægyptus and Danaus; to Lynceus, son of Ægyptus; to Palamedes; and to the Danaides, daughter of Danaus.

Belvedere, architectural term for a small building constructed at the top of a house or palace, and open to the air, at least on one side, and often on all. The term is an It. compound, signifying a fine view, and in Italy Bs. are constructed for that purpose. The chief example is in the Vatican. In France the term is applied rather to a summer-house in a park or garden than to the constructions on the tops of houses.

Belvedere (*Kochia scoparia*), species of Chenopodiaceæ which is native to E. and Central Asia. It is cultivated in Britain as an ornamental plant on account of its leaves, which resemble those of a cypress; hence it is called the summer cypress.

Belvidere, co. seat of Boone co., Illinois, U.S.A. Fine public buildings and factories. Pop. 8000.

Belvisia (*Napoleona imperialis*), species of Lecythidaceæ which grows in tropical W. Africa. It grows to a height of 7 or 8 ft. and is loaded with large, broad,

bright blue, red, or white flowers. The fruit resembles a pomegranate.

Belvoir Castle, situated 4 m. S. of Bottesford in Leicestershire, England. Since the time of Henry VII. it has been in the hands of the Manners family, and is now the seat of the duke of Rutland. The castle itself is a fine castellated, pseudo-Gothic building. During the Civil war it was a royal stronghold, whilst its hist. goes back to the days when William the Conqueror granted its site to Robert de Todenei, who founded a priory at the foot of the isolated mound from which the castle commands so wide a prospect. Its picture gallery contains paintings by Vandyck, Murillo, Reynolds, Holbein, etc.

Bely, Andrei (pseudonym of Boris N. Bugaev) (1880-1934), Russian poet and novelist. His *Petersburg*, pub. in 1913, was highly rated by contemporary Russian critics. It is the story of a revolutionary student whom the police try to provoke to murder his father, a senator. Basically the work is the story of Petersburg itself, seen as a dream rather than as a real city. B. followed this up with 2 vols. of a vast piece of fiction which was known as *Moscow*. Here he gives an immense fresco of the scientific, literary, political, and popular personages of the city; but he *d.* before much of the work was completed. He has been called a blend of James Joyce and Marcel Proust.

Belyta, genus of hymenopterous insects of the family Proctotrypidæ. They are cosmopolitan, and their larvæ live in the bodies of insects and spiders or in their eggs. These parasites are minute, have 4 wings, and frequent sandy places.

Belz, small tn. of W. Ukraine, formerly of Poland, 39 m. N. of Lwów.

Belzoni, Giovanni Battista (1778-1823), lt. traveller and antiquarian, *b.* at Padua, but lived during his youth at Rome, where he intended to enter the monastic life, but in 1800 he left Italy and visited most countries in Europe. In 1803 he came to England and married; he lived by exhibitions of feats of strength. He was interested in hydraulics, and went to Egypt with a plan for irrigating that country; the jealousy of the natives frustrated his intentions. He shipped many monuments of Egyptian ant. civilisation to England, and discovered many unknown tombs along the course of the Nile. In England he pub. an account of his travels and excavations.

Bem, Joseph (1795-1850), Polish general, *b.* at Tarnow, Galicia. He was educated at the univ. of Cracow, and admitted as a cadet in the corps founded by Napoleon at Warsaw. After 13 years' military service, he took part in the Polish rebellion, 1830-31. He then left for Paris, where he lived for 16 years. In 1848 he joined the Hungarians, and received command of 10,000 men. In 1849 he defeated the Austrians, driving them and the Russian allies into Wallachia. He also expelled Puchner from the Banat and returned to Transylvania. Here he was forced to retreat before superior forces of the Russians, and escaped to Hungary, where he fought in the battle

of Segesvár. He escaped to Turkey, and there embraced the Muslim faith. He was appointed to the sultan's army as Amurat Pasha.

Bemba, *see* BANGWELO.

Bembatoka Bay, *see* BOMBETOKA.

Bembex, typical genus of the hymenopterous family of insects known as Bembecinae. They are peculiar to hot climates and resemble wasps in size and colour.

Bembo, Pietro (1470-1547), lt. historian, *b.* at Venice, the son of a Venetian patrician; studied at Padua and Ferrara, learning Gk. from Lascaris of Messina. He pub. imitations of Petrarch. At Urbino he became acquainted with Giuliano de' Medici, brother to Leo X., whose secretary, by Giuliano's influence, B. became. He had many benefices, and in 1530 was commissioned by the Council of Ten to write the hist. of the Venetian republic; he wrote this in Lat., completing it up to the year 1513. In 1539 he became a cardinal.

Bembridge Beds, geological name for a fossiliferous div. of the Upper Eocene strata, principally developed in the Isle of Wight. The beds rest on a compact cream-coloured limestone, known as B. limestones. The shells of *Limnæa* and *Planorbis* are found in large quantities, but the distinguishing feature of the beds is the mammalian remains of *Palæotherium* and *Anapalæotherium*. The vil. of Bembridge in Hampshire gives its name to this geological formation. Its pop. is about 1500.

Bemselberg, Konrad, *see* BOYNEBURG.

Ben, the first syllable in many Heb. names, and means son, lit. or metaphorically, *e.g.* Ben-hadad is the son, or the worshipper, of Hadad, or Adod, the chief idol of the Syrians. Ben-jamin is son of the right (hand), *i.e.* son of happiness.

Ben, Beinn, or Bhein, word in the Scottish dialect of the Gaelic language which has been adopted to indicate most elevated summits of mt. ranges. A corresponding term is *pen* which occurs in the names of many places in Cornwall and Wales.

Ben, Oil of, extracted from the seeds, called Ben-nuts, of a tree found in the E. Indies and Arabia, and known as the horse-radish tree (*Moringa pterygosperma*). When first exposed to intense cold the oil deposits a whitish, flaky substance, and this being removed, is unaffected by cold, on which account it is of value to watch-makers. Oil of B. is also used by painters, and by perfumers to extract the scent from flowers. When pure it retains its sweetness.

Benadir, coastal dist. in the S. of It. Somaliland, containing Brava, Marka, Warscik, and Yub, the ports of the protectorate. *See also* under SOMALILAND, ITALIAN.

Benalla, township of the Delalite co. of Victoria, Australia, 43 m. S.W. by W. of Beechworth. Pop. 3000.

Benares: 1. Tn. in the native state of B. in the United Provs., India; one of the most ant. cities of the world, and the holy city of the Hindus. Ruins, situated

3½ m. to the N. of the city, indicate that here was the original site. In the sixth century Sakya Muni, the Buddha, estab. his religion there, a fact which testifies to the status of the city even at that time. Its modern temples number about 1500. Its appearance from the R. Ganges is one of great beauty. Numbers of bathers are observed daily washing away their sins in the waters of the riv. But the city itself is narrow, crooked, crowded, and dirty. It is surrounded by a road called the Panch-kos road, from the limit of its distance, 5 kos (7½ m.), from the city. Sacred rites are observed in connection with it, and thousands of pilgrims traverse it in the belief that they are ensuring entrance to the heaven of Siva. The European quarter is situated

he wrote his first notable play, *Gente Conocido*. In 1922 he was awarded the Nobel prize. His plays are elegant and polished comedies; among the best known are *Lo Cursi*, 1901; *El Hombrecito*, 1903; *Rosas de Oloño*, 1905; and *La Malquerida*, 1913. Many of the plays have been trans. into Eng., by J. G. Underhill, 4 series, 1919-24.

Benbecula, is. of the Hebrides, lying between N. and S. Uist, and about 20 m. W. of Skye. It belongs to Inverness-shire. Its area is about 36 sq. m. Three-quarters of the land is taken up by farming. Pop. 1200.

Benbow, John (1650-1702), Eng. vice-admiral, spent his whole life in active service at sea. Near Jamaica he attacked a Fr. squadron far superior in numbers



Canadian Pacific

BATHING GHATS ALONG THE GANGES AT BENARES

to the W., and contains the B. College and the Hindu Univ., constituted in 1916. In 1929 the foundation stone of an agric. college was laid. Its chief manufs. are silks, gold, and silver thread, filigree work, and embossed brass-ware ('Benares ware'). Pop. 264,000. The state of B. has an area of 875 sq. m., and is a level tract watered by the Ganges, Karamnasa, Gumti, and Burna. It yields barley, rice, wheat, sugar, and opium. Its climate is cool in winter, but hot to an extreme degree in the summer. Famines occur occasionally. 2. Formerly a dist. of Brit. India, B., the family domain of the Maharaja of B., was constituted a native state in 1911. In 1919 the tn. of Ramnagar was also handed over to the Maharaja, to be used as his cap. Pop. c. 450,000.

Benavente, tn. standing on the R. Isla in the Zamora prov., Spain. Silk spinning is the industry. Sir John Moore began his retreat to Corunna here in 1808. Pop. 5000.

Benavente y Martínez, Jacinto (b. 1866), Sp. playwright, b. in Madrid. He entered the univ. there and studied law, but left it for literature. He travelled over Europe and for a time was manager of a Russian circus and an actor. In 1896

to his own; his leg was broken by a shot, but he sat on deck to take charge of the attack; he was defeated owing to the want of support from other officers; he returned to Jamaica, the officers were punished, and he d. of his wounds.

Bench, see INNS OF COURT.

Bench-warrant, order issued by the court to enforce obedience, as in the case of delinquent jrymen, for contempt of court. These warrants are used extensively in the U.S.A.

Benckendorf, Alexander, Count (1849-1917), Russian diplomat, b. at Berlin, Aug. 1; son of Constantine, Count B., and Louise, princess of Croy-Dülmen. A Rom. Catholic, educated in France and Germany. He was in the diplomatic service, 1869-76, as attaché at Rome and Vienna, and again in 1886 as first secretary at Vienna. Was Russian minister at Copenhagen, 1897-1903. Amb. to England from 1903. He was believed to have prevented, when on a visit to Copenhagen in 1905, the completion of an understanding between the Ger. Emperor and the emperor of Russia, at Björkö (Sweden). Under his auspices the Anglo-Russian Agreement was signed 1907, completing the Triple Entente.

Bencoolen, cap. of the residency of B. Sumatra; situated on the S.W. coast. The Eng. settled there in 1865, and estab. an extensive trade. It was ceded to the Dutch in 1825. Its pop. is 10,000. The residency covers an area of 9690 sq. m., and has a pop. of 257,000.

Ben Cruachan, mt. 3689 ft. high, in Argyllshire, Scotland, just N. of Loch Awe.

Bencezur, Julius (1844-1920), Hungarian painter, b. at Nyiregyháza. Studied under Karl Piloty in Munich, and in 1883 became director of the Academy of Budapest. His most noteworthy paintings are: 'Arrest of Rákóczy in 1701,' 1869; 'Family of Louis XVI. during the Assault on Versailles,' 1872; 'Bacchanti,' 1881; and various portraits.

Bend, Bando, or Balteum, heraldic term for one of the group of figures called ordinaries, which are the earliest devices of medieval heraldry, being 9 in number, and simple in character. See HERALDRY.

Bend (dyke), see BAND.

Benda, Georg (1722-95), Czech composer, b. at Staré-Benátky, Bohemia. He was one of a noted musical family. He was also a pianist, violinist, and a musical director at Berlin in 1742, Gotha in 1748, and Hamburg in 1778. He composed operas and cantatas. He d. at Köstritz, Thuringia.

Benda, Julien (b. 1868), Fr. critic, philosopher, and novelist, b. in Paris. Almost wilfully opposed to the spirit of the age in all things, he regards dissent as a sign of degeneracy. This is revealed in his *L'Ordination* (1913) (a story of winter in Paris); in *Marie Claire* (1911); and also in the *Dialogues d'Eleuthère* and in his pamphlet *Le Bergsonisme*. He is an anti-Bergsonian, and hostile to the neo-vitalists for their effusiveness and mobility. His reputation rests mainly on his *Trahison des cleres* (1927), in which he inveighs against the prostitution of literary or artistic powers to political ends. In *Belphegor* he is a stern critic of democracy. He has been well described as a 'die-hard' intellectualist. This attitude is exemplified in his novel *Les Amourants* (1927). His later writings include *Un Régulier dans le siècle* (1938), *La grande épreuve des démocraties* (1940), and a book on Kant (1940). See Herbert Read, *Julien Benda and the New Humanism*, 1930.

Bendall, Cecil (1856-96), Eng. orientalist. He issued a *Catalogue of Buddhist Sanscrit MSS. in the University Library, Cambridge*, 1883. He also wrote *A Journey of Literary and Archaeological Research in Nepal and Northern India*, 1886. In 1885 he was appointed to the chair of Sanskrit in London Univ.

Bendamir, Bendemeer, Bendamur, or Bundameer, riv. of Persia, which flows into Lake Tashk or Nargis, to the E. of Shiraz.

Bendemann, Eduard (1811-89), Ger. painter, b. at Berlin. His master was Friedrich Wilhelm Schadow, whose daughter he married later. In 1832 he produced his picture of the 'Captive Jews' at Berlin. His fame spread, and in 1837 he was awarded the gold medal at

Paris. In 1838 he was appointed to the professorship at the Academy of Art in Dresden. His paintings were correct and elegant, but lacking in passion and force. In 1858 he succeeded his former master, Schadow, in the directorship of the Düsseldorf Academy.

Bender (Bendery), or Tighina, tn. in the Moldavian republic, U.S.S.R., formerly of Rumania, situated on the r. b. of the Dniester. Tobacco, candles, and bricks are produced, while it exports corn, wine, and cattle. Timber is floated down the Dniester. The tn. dates back to the twelfth century. Pop. 38,000.

Bendl, Karel (1838-97), Czech composer, b. in Prague. Was successively conductor of theatres in Brussels and Amsterdam; of the choir *Ilhahol*, Prague; and of private noblemen's orchestra in Nice and in Milan. Then devoted himself entirely to composition, with especial inclination to choruses, duets, and songs with orchestra. Shows the influence of Smetana. His works are tuneful and cheerful, but are almost forgotten. They include *Starý zenich* (The Old Bridegroom), 1871; *Indická princezna* (Indian Princess), 1877; *Dítě Tábora* (The Child of Tabor), 1888; *Carovný květ* (A Magic Flower), 1891; *Česká svatba* (Czech Wedding Day), 1892; a ballet, and folk-songs.

Bendigo, formerly Sandhurst, tn. and co. in Victoria, Australia. The co. has for its W. boundary the R. Loddon, and the Campaspe on the E. Its area is about 1949 sq. m. The tn. is noted for its gold and quartz mining. Rich deposits of gold were found in 1851. It is also noted for its agric. produce and wines. It is on the main line of railway between Melbourne and Echuca, 100 m. N.N.W. from Melbourne. Pop. 31,000.

Bends, Karl Knutssen, see CHARLES VII. (of Sweden).

Bendzin, tn. in the prov. of Lodz, Poland. It is one of the chief coal-mining centres of S.W. Poland. Pop. 27,000.

Benedek, Ludwig von (1804-81), Austrian general, b. at Odenburg, Hungary. He was a doctor's son. He started his career in the army in 1822. In 1846 he took part in the suppression of the Polish peasants in Galicia. In 1847 he commanded a regiment in Italy, and again received command during the Hungarian campaign of 1849. Then he returned to Italy. He repelled the Piedmontese at Solferino. In 1860 he became governor of Hungary. Six years later, 1866, he had command of the A. Austrian army in the war with Prussia. He was defeated at Sadowa, and was suspended, a court-martial being ordered. This latter was dropped by the emperor's command. B. retired to Graz, where he d.

Beneden, Pierre Joseph van (1809-94), Belgian zoologist and naturalist, was appointed head of the Louvain Natural History Museum in 1831. In 1881 he was appointed president of the Academy of Sciences. Among his most notable works are *Zoologie médicale* (in collaboration with Gervais); *Osteographie des cétacés vivants et fossiles*, 1868; and *La Vie animale et ses mystères*, 1863.

Benedetti, Vincent, Count (1817-1900), Fr. statesman, *b.* at Bastia in Corsica. At 23 years of age he entered the Foreign Office. Five years later, in 1845, he was appointed consul in Egypt, and in 1848 consul at Palermo. In 1864 he was ambas. at Berlin. He drafted a secret treaty between France and Prussia, which was made public when war broke out in 1870. For this he was criticised, and retired to Corsica. He was exonerated before he *d.* in Paris.

Benedicite, the canticle or hymn, beginning in Lat. 'Benedicite omnia opera Domine,' and in Eng., 'O all ye works of the Lord, bless ye the Lord.' It is probably an enlargement of the 148th psalm. It occurs in the Gk. and Lat. Bible in the third chapter of Daniel, under the title of the Song of the Three Children. It is said to have been sung by the 3 young Jews, Shadrach, Meshach, and Abednego in the burning fiery furnace. This hymn formed part of the Christian service from the time of St. Chrysostom, and is still used in the Anglican Church.

Benedict, name assumed by 15 popes and 1 anti-pope. Of the earlier occupants of the papal chair who bore this name, the following list gives the date of their accession and death. B. I., 573-78; B. II., 684-85; B. III., 855-58; B. IV., 900-03; B. V., 964-65; B. VI., 972-74; B. VII., 974-83.

Benedict VIII. (1012-24). In the early days of his pontificate he was opposed by an anti-pope, Gregory, but was reinstated by the Emperor Henry II. In his days, the Saracens began their attacks upon the S. coast of Europe, and the same age also witnessed the beginning of the It. settlements of the Normans. The pope was noted for his disciplinary policy, and opposed and forbade the marriage of priests.

Benedict IX. (1033-c. 1056). Nephew of the preceding pope, who obtained succession of the papal chair at the age of 12. The unexampled licentiousness which corrupted his court, although tolerated by the emperor, caused the Romans to revolt and drive him out. He was replaced by a pope, Silvester, and later still another pope was elected in the person of one Gregory. Henry III., the emperor, caused all 3 to be deposed, and replaced them by a pope Gregory II., who *d.* 2 years later (1037). B. IX., again seized the papal chair, but was again driven forth by the Romans.

Benedict X. (1058-59). Elevated by the Rom. barons, he was opposed by the great Hildebrand, who caused another pope to be elected, and who finally deposed and degraded Benedict.

Benedict XI. (1303-4). Was unanimously elected, but was faced by great difficulties, the legacy of his predecessor, Boniface VIII. He *d.* in the year after his election, probably poisoned by Nogaret, whom he had excommunicated.

Benedict XII. (1334-42). Nephew of John XXII., whom he succeeded in 1334. Although elected by the influence of nepotism, he opposed nepotism during his tenure of office. He reformed the monastic orders.

Benedict XIII. (1724-30). Title held by Francesco Orsini, who became pope in 1724. A great theologian and philosopher, who wrote a number of works which were pub. after his death. He meddled but little in political matters, and failed in his attempts at reforms.

Benedict XIII. Pedro de Luna, member of a noble Sp. family, elected anti-pope by the Fr. cardinals at Avignon in 1394. It was expected that after his election he would end the schism by voluntary abdication, but by his firmness and his belief in his own cause he prolonged it for 30 years. Abandoned by the cardinals who had elected him, recognised nowhere save in Spain and Scotland, at times in fear of his life, he remained anti-pope until his death in 1423.

Benedict XIV. (1740-58), archbishop of Bologna, where he was *b.* in 1675, and elected to the papal chair in 1740. He did something to reform the papal states, but his reforms were not sweeping enough. He attempted also to reform the missionary methods of the Jesuits in S. America, India, and China. During the whole of his pontificate he continued his studies, and also had a number of scholars at his court. He was learned, enlightened, and tolerant. He *d.* in May 1758.

Benedict XV. (Giacomo della Chiesa) (1914-1922). A learned occupant of the papal chair, whose diplomatic training stood him in good stead during the First World War. B. 1854. Trained at first for the law at the Ateneo, he abandoned a legal career and was ordained in 1878, becoming secretary to the papal embassy in Madrid in 1882. Five years later he was a member of the household of Cardinal Rampolla; then secretary of state to Leo XIII. In 1907 he was archbishop of Bologna and in 1914 was elected pope. His sev. attempts to bring about peace were rendered nugatory by his extreme neutrality, which delayed his protests against Ger. infractions of international law and usage until too late to be effective. But he interceded with success with the Fr. and Ger. Govs. for the exchange of prisoners of war, and, again, was instrumental in stopping the pro-Ger. propaganda of the Carlist Rom. Catholics in Spain. It was during his régime that the Brit. Gov., for the first time for centuries, accredited a diplomatic representative to the Vatican and that the Fr. Gov. resumed diplomatic relations after a lapse of nearly 20 years.

Benedict, Saint (480-543), founder of the order of Benedictine monks, *b.* at Nursia in Italy, was educated at Rome, but at the age of 14 removed to Subiaco, a desert place 40 m. distant, and concealed himself in a cavern. The monks of a neighbouring monastery chose him for their abbot, but he retired to solitude again; many followed him and put themselves under his direction; in a short time he founded 12 monasteries. He converted (in 528), the people at Monte Cassino from idolatry; here he founded other monasteries, and composed his *Regula Monachorum*, or *Rules for Monks*,

which did not receive papal sanction until 52 years after his death. See I. Hinwogen, *St. Benedict*, Eng. trans., 1924.

Benedict, Sir Julius (1804-85), Ger. composer and musician, *b.* at Stuttgart. His father was a Jewish banker. His studies, under Hummel, took place at Weimar, and under Weber at Dresden. In 1825 he was appointed director of the Ger. opera at Vienna. In 1836 he came to spend the rest of his life in London. He was conductor of the Eng. opera at Drury Lane at the time of Balfe's popularity. In 1838 he composed *The Gipsy's Warning*, *The Bride of Venice* in 1843, and *The Crusaders* in 1846. In 1850 he went to America in company with Jenny Lind on her oratorio tour. One of his most successful operas was *The Lily of Killarney*. He was created a knight in 1871, and *d.* in London.

Benedict Biscep (628?-690), Eng. monk and ecclesiastic, *b.* of a noble Northumbrian family, his surname probably being Baducing. During his early life he was a courtier at the court of King Oswin. After 2 journeys to Rome (he later made sev. more) he became a monk at Lerins. In 669 he escorted Theodore of Tarsus to Canterbury, and was made abbot of St. Peter's Monastery at that place. Some years later he made his third journey to Rome and returned with a vast store of books and manuscripts. He built and endowed with these a monastery at Wearmouth, on land given him by King Egfrith of Northumbria. In 682 he erected a dependent house at Jarrow. He was a pioneer of Saxon architecture, and gave impetus and opportunity to literature and culture in England.

Benedictine, see LIQUEURS.

Benedictine Order, the order of monks, known also as Black Monks, who follow the rule of St. Benedict. The year when the order was first estab. is unknown, but it is known that 14 monasteries were founded by St. Benedict (*q.v.*) before his death in 543. There were nuns of this order as well as monks. The aim of the order is the personal sanctification of its members compatible with living in community and the performance of divine office in choir. The influence of its members is much to be seen in the Teutonic races in N.W. Europe, in their art, literature, and education, in which subjects the Benedictine monks largely engaged. The first monastery of the order was founded at Sublaco but later the abbey of Monte Cassino became the centre of the order. The conventual buildings were destroyed in the sixteenth century by the Lombards, and again by the Saracens, and other invaders. Unhappily the abbey again suffered severe damage during the Second World War, when the cenotaph of the saint was destroyed and the tower in which he was believed to have lived was razed to the ground. (See CASSINO, BATTLE OF.) The B. order was first introduced into England by St. Augustine, and by the time of the Dissolution there were some 300 flourishing establishments. All the cathedral priories and most of the richest abbeys in England were of this

order, and 5 colleges of Oxford and Cambridge owe their origin to the monastic foundations of the Benedictines. Likewise a number of the univs. of Europe developed from the schools of the B. monasteries. At the present day the Eng. prov. of the order includes 5 monasteries, the abbeys at Ampleforth, Downside, Woolhampton, Hereford, and Fort Augustus, and 4 nunneries. See H. N. Birt (ed.), *Cardinal Newman on the Benedictine Order*, 1914; C. Butler, *Benedictine Monachism*, 1919; D. Knowles, *The Benedictine Order*, 1929.

Benediction (from Lat. *benedico*, to bless), the conferring of a blessing, or an earnest wish for the welfare of a person or project. In the Catholic Church there is the sacerdotal B., which is performed only by the priest. In this acceptance of the function, only the power of the priests to resist evil forces is included, while in the wider interpretation of it by Christian denominations any hope strengthened by prayer is understood to deserve the name. Originally the B. was particularly resorted to in exorcism of evil spirits. The Rom. Catholic rite is performed generally by the priest barefooted and with uncovered head, and during the prayer holy water is sprinkled. Of these functions the B. of the Blessed Sacrament is the most popular. Among reformed churches the term is applied to the words used by the preacher in dismissing his congregation.

Benedictus (Lat. *bene*, well, and *dico*, to say), song of thanksgiving composed by Zacharias, at the circumcision of his son John the Baptist. It commences in Lat. with 'B. qui venit in nomine Domini,' and in Eng. 'Blessed is He that cometh in the name of the Lord.' It has occurred since the ninth century in the service of the Christian Church, the usual version being 'Blessed be the Lord God of Israel.'

Benedix, Julius Roderick (1811-73), Ger. author and dramatist, *b.* at Leipzig. He was in succession a tenor, a journalist, a lecturer, and a stage manager. He was gifted with a vivid imagination which was evident in his dramatic works, and a fund of humour that was displayed in his comedies, which abound in witty dialogue and humorous intricate plot, with a continual variety of scene and incident. His dramatic works are numerous. Twenty-seven vols. have been collected at Leipzig. His literary works, apart from comedy and drama, are: *Popular German Stories*, pub. in 1839-40; *1813, 1814, 1815*, a book which presents scenes from the wars against Napoleon I., and *Scenes from Lives of Comedians*, pub. in 1847.

Benefice (*Beneficium*), term first used in reference to life interests in land. The name was employed by the Lombards and in the laws of Charlemagne's constitutions. These lands were generally won by distinction in war, and were given as incentives to martial prowess. Later the lands became grants of a hereditary feudal nature. To-day the word implies any variety of church dignity, and in particular those of rectories and vicarages which are B.s. with the cure of souls (hence curacy), these differing

from bishoprics and cathedral dignities. Exempt, or as they are sometimes called, peculiar Bs., are those not under the jurisdiction of a bishop, though regarding residence they are under episcopal administration. The holding of a B. is dependent upon 4 conditions. Of these the first is Holy Orders; the second is Presentation, i.e. the formal donation of the B. by the patron; the third is Institution, at which ceremony responsibility for the cure of souls is formally committed to the clergyman by the bishop; fourthly, there is Induction, the ceremony of giving the clergyman possession of the temporalities. The work involved in the holding of a B. entails public worship, baptism, marriage, burial, the ceremony of the Lord's Supper, and the duties of visits and communion with the parishioners. The properties connected with a rectory are the freehold of the house, the glebe, and tithes. A vicar, as distinct from a rector, does not enjoy all of these emoluments, being entitled generally only to a portion of the ecclesiastical dues of a particular par. But a vicar is entitled to reside in the rectory house. In Scotland Bs. are divided into temporalities and spiritualities, i.e. lauds and teinds. The Patronage Act of 1874 regulates the election of its ministers. The Scottish minister has not the same rights in the church and churchyard as those held by ministers in England. His emoluments consist of the glebe and manse.

Beneficiary, in the law of both England and Scotland, term used to denote any person who is in the enjoyment of, or is entitled to, any interest or estate held in trust by other persons. It is often doubtful in the case of charitable bequests who the Bs. really are, and the courts or commissioners occasionally, as a result of their inquiries, reform the charity, and so change the class of Bs. (See CY-PRES.) The trustees are liable to give an account of their actions to the Bs., and an interdict or injunction may be issued against them by the latter if they make a wrongful use of their funds.

Benefit of Clergy, term used in connection with a previous condition of Eng. law. It demonstrates the power of the clergy and the ignorance of the people. Briefly, the benefit meant an exemption of clergy from the authority of secular magistrates respecting crimes and misdemeanours. The entire control over a priest was vested in the bishop. Later this was modified, though a priest could still resume holy orders after conviction. Still later the privilege was extended to all persons who were able to read. This law was abolished, after many purposeless modifications, in the reign of George IV. In Scotland the benefit was never recognised.

Benefit Societies, see FRIENDLY SOCIETIES.

Beneke, Friedrich Eduard, Ger. psychologist, b. at Berlin, 1798. He pub. many books on metaphysics and ethics, also large treatises upon philosophy. His 2 books, *Theory of Knowledge and Foundation of All Knowledge*, are well known. In

1854 he suddenly disappeared; 2 years later his body was discovered in the canal at Charlottenburg.

Benelux, the customs union of Belgium, the Netherlands, and Luxembourg, an agreement for which was signed in London by the three govts. in exile on Sept. 5, 1944. It came into force on Jan. 1, 1948, with the form of a tariff union; the same duties are imposed by all three countries on imports from abroad, but no import duties are levied on goods exchanged between the three countries. Further stages in the B. union will be progressive abolition of quotas, licences, excise and consumption taxes, culminating in final economic union when goods will move within the three countries as easily as they do in the United Kingdom or U.S.A. See also BRUSSELS CONFERENCE.



Karsh, Ottawa

EDUARD BENĚŠ

Beněš, Eduard (1884 - 1948), Czech statesman. Early in life he was a tutor at the Czech Univ. at Prague, but at the beginning of the First World War he fled from Bohemia to join Masaryk (q.v.) and General Stefanik. The Czechoslovak National Council was founded by these 3 men, and a Czech national army brought into being. At the end of the war B. was chosen with Dr. Kramarz to be one of the two Czechoslovak delegates to the Inter-Allied Peace Conference at Paris in 1919, and he became the first foreign secretary of the newly created Czechoslovak Republic, of which Masaryk was the first president. He succeeded Masaryk as president in December 1935. It was B. who fashioned the Little Entente, an anti-Hungarian pact in alliance with Yugoslavia and Rumania, and an alliance with Russia was concluded during his presidency. When

Germany seized Austria in 1938 it became obvious that the independence of Czechoslovakia was threatened, and after the Munich pact on Oct. 5, 1938, B. resigned the presidency. He left Czechoslovakia on Oct. 22, took first a lectureship at Chicago Univ., and later came to England. After the outbreak of the Second World War B. took the lead in the movement for the restitution of Czech freedom in co-operation with the W. Allies. When, in 1940, the Czech National Committee was recognised as a provisional gov. B. again assumed the functions of president. After the defeat of Germany, B. returned to Czechoslovakia in May 1945 at the head of the Second Czechoslovak Republic. Under his continued presidency, the country settled down under a gov. of advanced views to a programme of reconstruction, which included the nationalisation of some thousand large industrial concerns. The first elections in the liberated republic were held on May 20, 1946, the Communists emerging as the leading party, and on July 3, 1946, Klement Gottwald, the Communist leader, formed a new gov., whose programme was, at first, a continuation of his predecessor's (Fierlinger). Subsequently Gottwald, instigated by Russia, turned Czechoslovakia into a one-party police state, and B. was compelled to accept Gottwald as head of this new Communist gov. He resigned his office of president in May 1948, and was succeeded as president by Gottwald. See Pierre Crabitès, *Beněš: Statesman of Central Europe*, 1935.

Beneschau, tn. of Czechoslovakia, 18 m. S.S.E. of Budejovice. Pop. 7800.

Benét, Stephen Vincent (1898-1943), Amer. poet and novelist, b. at Bethlehem, Pa., U.S.A.; graduated at Yale. During his college days he wrote *Five Men and Pompey*, 1915, and *Young Advocate*, 1918, both in verse. His first novel, *The Beginning of Wisdom* (1921), exploits his college experiences. The poems in *Heavens and Earth* (1920), *King David* (1923), *A Ballad of William Sycamore* (1923), and *Tiger Joy* (1925), are decorative in style, but matured. His best work is the long narrative poem of the Civil war, entitled *John Brown's Body*, which was pub. in 1928, and was awarded the Pulitzer prize. His novels include *Young People's Pride* (1922), *Jean Huguenot* (1923), and *Spanish Bayonet* (1926). His short stories are in *Tales before Midnight* (1939).

Benevento, tn. of Campania, Italy. It is the cap. of B. prov., and is situated on a hill of 400 ft., at the confluence of the Calore and Sabatto. Its pop. is 20,000, while that of the commune is 27,000. Originally the old tn. of Beneventum stood on its site, a tn. which is reputed to owe its foundation to Diomedes. The Romans defeated the Samnites in 314 B.C., who found shelter at Beneventum. During their final campaign of 275 B.C. the tn. was used by the Romans as a centre of their military activities. In 268 B.C. a Lat. colony was founded there. Hitherto the tn. had borne the name of Maicentum, but now it assumed the above name, which was given it on account of

its meaning. Antique remains testify to its importance, of which the most imposing is a triumphal arch erected to Trajan by the senate. The tn. became the residence of a powerful Lombard duchy and remained in a state of independence till 1053, when the emperor Henry III., who had made himself master of the city, exchanged it with Leo IX. for the bishopric of Bamberg. From that time it continued in papal possession till 1806, when the emperor Napoleon I. bestowed it, with the title of prince, on Talleyrand. It was united to Italy in 1860. The tn. is subject to earthquake visitations, and considerable damage has been done. The prov. is 834 sq. m. in extent. The prin. industries are the manuf. of leather, parchment, and plated ware. In the Second World War B. felt the full shock of war as the battle surged on northwards from blasted and liberated Naples. B., its cathedral, and the entire lower city between the cathedral and the Vanvitelli Bridge, a mass of ruins, fell on Oct. 2, 1943. This bridge, however, has since been well restored. The famous Rom. bridge also sustained some damage.

Benevolence, a type of compulsory loan exacted by kings who dispensed with legal justification. It originated in 1473 with Edward IV., though like contributions had been levied in previous reigns. They were not officially called Bs., however. They were voted unlawful in the reign of Richard III. in 1484, yet Richard often employed this illicit mode of enriching himself as did Henry VII. James I. attempted its adoption, though without material success. Bs. were rendered illegal both by the Petition of Right, 1628, and by the Bill of Rights, 1689.

Benfeld, tn. of the dept. of Bas-Rhin, France, situated on the R. Ill, in a dist. of great fertility. Its chief productions are tobacco, hops, and hemp. It was besieged by Count Ulrich of Württemberg, 1331, and by the Armagnacs, 1444. It was ceded to Sweden in 1632, but it came into the hands of the Gers. by the treaty of Frankfurt. It again became a Fr. tn. with the return of Alsace-Lorraine after the First World War. Pop. 3000.

Benfey, Theodor (1809-81), Ger. philologist of Jewish parentage, b. at Nörten, near Göttingen. He pub. many manuals and trans., and in 1866 he sent forth his great work, the Sanskrit-Eng. dictionary. All his works were produced under stress of great poverty. As a result of his unflagging labours for a period of over half a century, Sanskrit philology owes more to him than to almost any other scholar. His death occurred at Göttingen.

Benfleet, urb. dist. of Essex, England, recently formed from the vils. S. Benfleet, which is 7 m. W. of Southend (pop. 12,000), Thundersleigh, and Hadleigh. N. Benfleet is 10 m. N.W. of Southend, and has a pop. of 600.

Bengal, prov. of India until the partition of India in 1947, bounded on the S. by the bay of Bengal, on the W. by Nepal and Bihar and Orissa, on the N. by Sikkim and Bhutan, and on the E. by Assam and Burma, and comprising the 5

divs. of Bardwan, Rajshahi, Presidency, Dacca, and Chittagong. In 1947 the prov. was divided into two, W. B. (chiefly Bardwan div.) falling to India, with an area of 26,912 sq. m. and pop. of 19,341,000. E. B. prov. (Pakistan), including the Sylhet div. of Assam, has an area of 56,008 sq. m. and pop. (estimated) of 44,081,000. The pop. of the former B. prov. is divided between Muslims 55 per cent, Hindus 43 per cent, the remainder being Indian Christians and Europeans. Bengali is the chief language. Calcutta (pop., with suburbs, 2,110,000), on the Hugli, is the cap. of W. B., and the chief tn. and port; Dacca (pop. 213,000), on the Brahmaputra, and Howrah (pop. 379,000), opposite Calcutta, are 2 other important cities. Chittagong (pop. 140,000) is in Pakistan and, after Calcutta, the most important port of the region.

Geography. Since the greater part of B. consists of the alluvial plains of the Ganges and Brahmaputra Rs., it is low-lying, though in the N. near the Himalayas, the Singalila Range attains an altitude of 12,000 ft. The Chittagong Hill Tracts, 4300 ft., and Hill Tippera, 3000 ft., are the only other heights. B. is remarkable for its network of waterways, the prov. owing its existence to the 2 great rvs., mentioned, the combined delta of which covers an area nearly as great as that of England and Wales. The lower part of this delta, the Sundarbans, is a half-submerged region of dense forest and mangrove swamps, changing in outline and aspect as a result of the silting of the riv. channels and the formation of is., which ultimately become joined to the mainland. The ports of B. are all situated many miles up-stream on the 2 main channels, the Hugli in the W. and the Padma in the E. Large areas that were once covered by dense jungle are now cultivated fields, but forests still occupy about 12,000 sq. m. of B. These forests under the control of the B. Forest Dept., have since 1854 been under scientific management and yield revenue. Elephants, wild buffaloes, tigers, leopards, rhinoceroses, bears, wolves, and other wild creatures are still to be found in the more remote tracts.

Climate. Though much of B. is outside the tropics, the climate is tropical, but is not, on the whole, unhealthy for Europeans, most of whom, however, spend the hot, wet season in the hills of the N., around Darjeeling, the hot-weather cap. The rainfall is heavy, but varies in the different dists., and in different seasons. So irregular is it that it may sometimes cause disastrous floods, while at other times the land suffers from droughts. Earthquakes occur occasionally and damage is sometimes done by cyclones, especially in the E. A cyclone in 1919 resulted in much loss of life and destruction of property in the neighbourhood of Dacca.

Production. The alluvial plain of B. is one of the most productive, and therefore populous, dists. in the world. Three-quarters of the pop. are dependent upon

the land for their living. Rice is the chief crop, and more than four-fifths of the cultivated area is devoted to it. There are 3 harvests in the year. Jute, tobacco, sugar, oil-seeds, and cotton are also grown, and there are extensive tea gardens in the N. and E. The jute industry, which is by far the largest industry in B., is centred in Howrah. Cotton materials are woven at Dacca, once famous for its muslin, and silk is made at Dinajpur. Coal is the chief mineral, the largest mine being at Raniganj, near the Bihar border; iron, copper, and salt are also obtained. Natural productions are extraordinarily abundant, and comprise, besides those mentioned, indigo, turmeric, opium poppy, pepper, ginger, spices, mulberry, timber, all in profusion. Almost every conceivable material necessary for human subsistence is to be found. The fishing industry, in the rvs. and off the coast, is of considerable importance.

Administration. Each prov. is administered by a governor with a council of ministers, forming the provincial gov., a legislative council, and a legislative assembly. The larger body, the legislative assembly, consists of 250 members elected by the constituencies. The legislative council has a maximum of 65 members, of whom 30 are elected by the constituencies, 27 by the assembly, and 6 to 8 nominated by the governor.

Communications. B. is well served by railways, the E. Indian being the main artery of traffic up the Ganges Valley; the E. Bengal railway serves the N. dists., and the Bengal-Nagpur line runs to the S. The many rvs. and canals are invaluable means of communication, and the roads are, on the whole, excellent. There are passenger services along the rvs. and round the coast, and ocean-going steamers connect Calcutta with near and distant ports.

History. The Moslem conquest of B. took place early in the thirteenth century. It was first administered by governors appointed by the Moslem emperors; then, for 2 centuries the governors ruled precariously as independent sovereigns. In 1576 it became a portion of the great Mogul empire and for a further 200 years was ruled by Mogul governors. In 1765 it passed under the administration of the E. India Co., which had here made its first settlements in 1633. In 1858, administration was transferred to the Crown. The rights of proprietors and cultivators were assured and protected by the Permanent Settlement of the Land Revenue Act and the Tenancy Act respectively, 1793 and 1859. The former presidency of B. included most of N. and Central India, the prov. later consisted of B. proper, Bihar, Orissa and Chota Nagpur; in 1905 the Sambalpur dist. was transferred to it from the Central Provinces, and the dists. of Rajshahi, Dacca, and Chittagong were detached and added to Assam. This partition was revoked in 1911, and in 1912 B. was reconstituted, Bihar, Orissa, and Chota Nagpur being formed into a separate prov. (See BIHAR.) In the same year the lieutenant-governorship of B. was changed to a

governorship. From that year until 1921 the prov. was administered by the governor with an executive council of 3 members. Under the Government of India Act, 1919, a further change in the administration was made. From 1921 to 1937 the governor acted through an executive council of 4 members in connection with certain 'reserved' subjects. Two members of this council were Indian. Other 'transferred' subjects were administered by the governor with the aid of 3 Indian ministers. On Apr. 1, 1937, the prov. was declared autonomous, and a legislative council and a legislative

gov. of B. was severely criticised for its maladministration, which was a contributory factor to the prevalence of famine. A gov. inquiry into the administration was set up in 1944 under the chairmanship of Sir Archibald Rowlands, and the report of this committee was pub. in Oct. 1945. The prov. was found to be under-administered, its communications had been allowed to decline, and in particular the public health and medical services were inefficiently run. In Mar. 1945 the provincial gov. was defeated in the Assembly over the budget proposals, and resigned. As a result the normal administrative machinery broke down, and consequently both legislative bodies were suspended by proclamation on Mar. 30, 1945. The governor, Mr. R. G. Casey, then took over the direct administration of the prov. under Section 93 of the Government of India Act. For the partition of B. between India and Pakistan, 1947, see beginning of article.

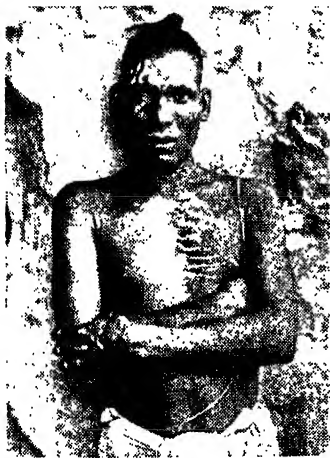
See C. Stewart, *The History of Bengal from the first Mohammedan Invasion to 1757*, 1910; F. A. B. Birt, *Men of Bengal*, 1911; L. B. Day, *Folk-tales of Bengal*, 1912; R. Tagore, *Glimpses of Bengal Life*, 1913; Yogendra-Nath D. Gupta, *Bengal in the Sixteenth Century*, 1914; C. E. Gouldsburg, *Tigerland: Reminiscences of Sport and Adventure*, 1915; L. S. S. O'Malley, *Bengal, Bihar and Orissa, Sikkim*, Cambridge, 1917; *History of Bengal, Bihar, and Orissa under British Rule*, Calcutta, 1925; F. J. Moynihan, *The Early History of Bengal*, 1925; and Dinesachandra Sena, *Glimpses of Bengal Life*, 1925; S. M. Edwardes and H. L. O. Garrett, *Mughal Rule in India*, 1930; P. G. Guha-Thakurta, *The Bengali Drama*, 1930.

Bengal, Bay of, part of the Indian Ocean. It stretches between India and further India, washing the whole of the E. side of the country. It is visited by the monsoons, which prevail over the whole area of the ocean. Many large rvs. empty themselves into the bay—the Ganges, and Brahmaputra from the N., while from the E. it receives the Irawadi, and from the W. the Mahanadi and Godavary. There are good ports on the E., but few on the W. The Andaman and Nicobar are the chief groups of is., which are numerous.

Bengal Hemp, name given to a species of Indian hemp (*Cannabis indica*), from which bhang (*q.v.*) and hashish (*q.v.*) are derived. See also **HEMP**.

Bengali Language, one of the forms of speech comprising the E. group of the Indo-Aryan tongues. It resembles Oriya and Assamese, since all 3 are derived from the same source. They are immediately descended from the Māgādhī Prakrit, and the centre of that language was Bihar. Bengali has 2 main dialects, of which the W. is the more pure. The oldest writer of Bengali is the poet Candī Dās, a Vaishnava. A school of poets was founded by him, who wrote hymns to Krishna. See A. S. and L. Roy, *Bengali Literature* (India), 1943.

Bengal Light, or blue light, as it is



NATIVE OF BENGAL
A Pujara Brahman.

E.N.A.

assembly were set up. The same year was notable for a crisis in the jute trade, B.'s staple industry, which required gov. intervention, but subsequently the mtrks. improved. A far graver situation arose in 1943 as a result of the decline in rice production, combined with an increase in pop. of over 1,000,000 since 1930. Famine conditions threatened as early as Apr. of 1943, and from Aug. until the end of the year they were acute. Over 15,000 persons died of starvation during that period, while another 10,000 were treated in hospitals as a result of malnutrition. Cholera and other epidemic diseases followed in the wake of famine, and between June 27 and Nov. 13 77,938 deaths from cholera were recorded. Altogether the total of deaths from all causes due to famine and disease caused by famine was estimated at 690,000 during the year. Relief centres were set up, and nearly 6000 kitchens estab. for the free distribution of food. At the same time the price of rice was controlled. The provincial

called, is a vivid signal light used at sea. It is a composition of nitre, sulphur, and black sulphide of antimony, ground to a powder, dried, and mixed, by weight, in the proportion: nitre 6, sulphur 2, and black sulphide of antimony 1. When this is lighted, a brilliant blue light which illuminates the sea for miles around is the result. The B. light is used in cases of shipwreck. Owing to the poisonous fumes from it the light cannot be used safely in enclosed spaces.

Bengel, Johann Albrecht (1687-1752), Ger. scholar and theological writer, b. at Winnenden, near Stuttgart. He pub. an ed. of the Gk. Testament, and his theological works were esteemed by John Wesley.

Benghazi, seaport, situated on the N. coast of Africa, in a prov. of the same name, cap. of Cyrenaica. It lies on a tongue of land separated from the mainland by a lagoon-like salt lake and a salt marshy tract. The harbour is only accessible to vessels of light draught. There are 2 narrow-gauge railways and, before the Second World War, it was in regular steamship communication with Naples, Syracuse, Tripoli, and other It. tns. Since the It. occupation many noteworthy buildings were erected and broad streets constructed. The prov. and tn. of B. were incorporated in the national ter. of Italy by a decree of Jan. 9, 1939. B. was captured by the Australians on Feb. 7, 1941, in spite of hard fighting by the It. under General Bergonzoli. The destruction by the R.A.F. of 75 planes on the air-field of Bernina was a contributory factor to the surprise attack on B. On Apr. 3, however, the Brit. and Imperial forces evacuated the tn., and it was twice bombarded by the Royal Navy during May. It was again occupied by Brit. and Imperial troops on Dec. 24 in an advance by General Auchinleck, but was recaptured by the Ger. and It. forces under Rommel on Jan. 29, 1942. After the battle of El Alamein, B. once more, and finally, fell to the Brit. forces under General Montgomery on Nov. 20, 1942. By this time, owing to repeated bombardment from the air, the tn. presented a scene of utter desolation. Scarcely a building remained intact, while areas remote from the docks were damaged by sabotage, ruined by neglect, or wrecked by looters. Pop. (1938) 65,000 (Its., 19,500; Jews, 3000; the remainder, Arabs).

Benguela, cap. of the dist. of that name in Angola and an important trading centre on the B. railway. This line was completed in 1929 and extended by agreement between the Portuguese and Belgian Govs. through the mining region of Katanga (q.v.) in the Belgian Congo, the connection with the Bas-Congo-Katanga line being completed 1931. The total cost, including the Lobito Bay port, was about £13,000,000, the greater part being provided by Brit. capital. Pop. 7000 (whites 1000). See also LOBITO BAY.

Benguet, prov. of the Philippine Is. Rice is grown and tropical fruits. The United States have also introduced

grapes, figs, blackberries, and strawberries into the prov. with success.

Benhadad, name of 2 (or, according to some, 3) kings of Damascus. B. I., son of Tabrimmon, was an energetic fighter. He besieged Ahab of Israel in Samaria (2 Kings vi.) and long opposed Shalmaneser, the Assyrian king. His death took place between 846 and 842 B.C. (see 2 Kings xvii. 7-15). B. II., son of Hazael, and probably the grandson of B. I. He was thrice defeated by Joash, king of Israel (2 Kings xiii. 25). More probably Mari, and not B., is the correct name of this king, as Rammannirari III. mentions a king of Damascus called Mari whom he besieged at Damascus. B., like his father, grievously oppressed Israel.

Benham, William (1831-1910), Eng. theologian, was tutor at St. Mark's College, Chelsea, 1857-64; prof. of hist. at Queen's College, London, 1864-73; and rector of St. Edmund's, London, in 1882. He trans. Thomas à Kempis's *Imitation of Christ*, 1874, and brought out an ed. of Cowper's letters in 1883. His best-known works are: *A Short History of the Episcopal Church in America*, 1884; *A Dictionary of Religion*, 1887; and (in collaboration with another) *Life of Archbishop Tait*, 1891. He was chief editor of the Anct. and Modern Library of Theological Literature.

Beni, the plural of the Arabic word *bn* or *ibn*, a son. It occurs in E. geography as a component part of many names of families or tribes, as Beni Temim, the sons of Temim, or the Temimides.

Beni, riv. in Bolivia. It rises in the Andes, and has a course of about 1000 m. Its current is very strong, and it is navigable only for some 200 m.

Beni, dept. of Bolivia, with a good climate and fertile soil, yet thinly populated. Trinidad is the chief tn. Pop. 36,000.

Benicario, seaport in Castellón, Spain. It manufs. a red wine, and also brandy. The wine is exported chiefly to Bordeaux, where it is mixed with lighter wine for table use. Pop. 8000.

Benicia, seaport and city in Solano co., California, U.S.A., on the strait of Carquinez, about 25 m. by water N.E. of San Francisco, with which it is connected by the S. Pacific railway. It has extensive wharves, shipyards, an arsenal and barracks. Pop. 2800.

Beni-Hassan-el-Qadym, or Old Beni-Hassan, vil. of Middle Egypt, situated near the E. bank of the Nile. In the neighbourhood are catacombs.

Beni-Israel (Sons of Israel), colony of Jewish descent settled on the Malabar coast, Bombay presidency, India. Although they acknowledge the Mosaic laws and have traditions which suggest an anct. Judaic invasion of India, they repudiate the name of Jews. According to some authorities, the B.-I. settlement in India dates no farther back than the fifteenth century, while it is supposed by others to be a remnant of the 10 tribes. The colony numbers about 5000.

Benin, country of Brit. W. Africa and

part of S. Nigeria, lying between the Niger and Dahomey. Its area was at one time very extensive, but the gradual securing of independence by small tribes occupying some of its states, has lessened it. The characteristics of B., climatic, botanic, and zoologic, resemble those of S. Nigeria. The name B. also embraces a city and riv. in the same locality. Its inhab. are pure negroes. The tn. is situated on Gwato Creek, and exports palm oil via Gwato, 30 m. distant. Coral exists in abundance. B. was taken by the Brit. in 1897, who found in the tn. human remains everywhere, pits encumbered with bodies in all degrees of decomposition, and altars reeking with human blood. Brit. possession was finally consolidated by a second expedition which entered the tn. in 1899. See A. M. Boisragon, *The Benin Massacre*, 1897.

Benin, Bight of, in the gulf of Guinea, between Capes Formosa and St. Paul. It consists of a continuous line of low, marshy, sandy shore, intersected by numerous rivs. and estuaries more especially towards Cape Formosa, where they form alluvial ls., which are part of the delta of the Niger.

Benin River, riv. of W. Africa, which flows into the Atlantic after a course of 70 m. It forms the W. boundary of the Oils R. Protectorate.

Beni Saf, seaport, with harbour of 26·2 ft. depth, in Algeria, 30 m. N. of Tlemcen, in the prov. of Oran. It exports iron ore found in the dist.

Beni-Suef, tn. and prov. in Central Egypt. The tn. is on the W. bank of the Nile, 63 m. S.S.W. of Cairo, and is the centre for the produce of the prov. of Fayum. It has a cotton factory and alabaster quarries. Pop. (census 1937), dist. 561,000; tn. 45,000.

Benjamin, youngest son of Jacob and Rachel. His mother, who *d.* at his birth, gave him the name of 'Son of my sorrow' (Ben-oni), but Jacob altered it to its present meaning, 'Son of my right hand' (or prosperity).

Benjamin, tribe of Israel, named from the youngest son of Jacob and Rachel. When the tribe entered Palestine it was given an area bounded by Ephraim, Dan, and Judah. The numbers of the tribe declined during the control of the Judges, but increased again by means of an addition of 400 virgins who were captured from Shiloh. In spite of the circumstance that its ter. lay to the W. and E., it was physically united with Judah, and it owed its increasing importance to its position between Judah and Ephraim. It is called 'the least of the tribes,' but it has a conspicuous place in the hist. of the O.T., for it gave the first king to the Jews, Saul being a Benjamite; Jerusalem belonged to the dist. of B., and when Israel came Bethel, the sanctuary, was allotted to B.

Benjamin, Judah Philip (1811-84), Amer. lawyer and politician, *b.* at St. Croix, W. Indies. From 1853 to 1861 he represented Louisiana in the Senate of the U.S.A. In the latter year he withdrew

from the Senate to become attorney-general in Jefferson Davis's provisional gov. of the S. Confederacy, being subsequently appointed secretary of war, 1861-62, and chief secretary of state, 1862-65. Nicknamed 'the Soul of the Southern Confederation.' After the surrender of the Confederates, B. escaped to England, and, entering Lincoln's Inn, was called to the Bar in June 1866. He practised on the N. circuit, and in 1872 was made queen's counsel. He enjoyed a wide practice in appeal cases to the Judicial Committee of the Privy Council. His book *Benjamin on Sale* is a legal classic. Owing to ill health he retired to live in Paris in 1882, where he *d.*

Benjamin of Tudela, Jewish rabbi, and author of the *Itinerary*, the son of Jonas of Tudela, was *b.* in the kingdom of Navarre in the twelfth century. He travelled from Constantinople through Alexandria in Egypt and Persia to the frontiers of China. He wrote an account of his journey, which reveals the position of the Jews in the countries he visited, and this has been trans. from the Hebrew in Fr., Eng., and Lat.

Benjamin Tree (*Styrax benzoin*), tree of the order Styracaceae, native of Sumatra and Java. It yields the fragrant resin called gum benzoin or gum Benjamin, which is used in the manuf. of incense and in perfumery.

Benkovac, tn. in Dalmatia, Yugoslavia, about 20 m. S.E. of Zara. Pop. 17,000.

Ben Lawers, mt. in Perthshire, Scotland, about 32 m. W.N.W. of Perth, on the N.W. side of Loch Tay. Commands a fine view. Height 3984 ft.

Ben Ledi (Gaelic, the hill of God), mt. in Perthshire, Scotland, 5 m. N.W. of Callender. Height 2873 ft.

Ben Lomond, mt. in Stirlingshire, Scotland, E. of Loch Lomond, and about 26 m. N.W. of Glasgow. An extensive view is obtained from the summit. Terminated on the N. side by a precipice of 2000 ft. Height 3192 ft.

Ben Macdhuil, or **Muichdhuil** (Gaelic, mt. of the black pig), mt. in Aberdeenshire, on the border of Banffshire, Scotland. The second highest mt. in Great Britain, its elevation being 4296 ft. Its summit is flat and bare.

Ben More, mt. name recurring frequently in Scotland. Best known are (1) 3843 ft. in Perthshire; (2) 3273 ft. (B. M. Assynt) in Sutherland; and (3) 3169 ft. on the is. of Mull.

Benmore, see FAIRHEAD.

Benn, Sir John Williams (1850-1922), Eng. printer and publisher of trade journals, *b.* at Hyde. His work as a councillor on the London County Council earned for him the sobriquet of father of the L.C.C. To the work of the L.C.C. he brought an almost passionate enthusiasm. At first the whip, and afterwards the leader of the 'Progressives,' he became chairman of the General Purposes and the Highways Committees and, in 1904-05, chairman of the council.

Benne Oil, also called gingill or teel oil, is expressed from the seeds of *Sesamum indicum*, and is used in cookery, also for

lighting, lubrication, medicine, and cosmetics. A favourite Indian cake is made with a mixture of this oil, honey, citron.

Bennet, Henry, see ARLINGTON, EARL OF.

Bennett, Enoch Arnold (1867-1931), Eng. novelist and playwright, *b.* at Shelton, Hanley-in-the-Potteries, N. Staffordshire, May 27, and educated at the Endowed Middle School, Newcastle-under-Lyme. Graduated at London Univ. Went into the office of his father, a solicitor in Hanley. In 1889 went into a solicitor's office in London, stayed there till 1893, when he became assistant-editor of *Woman*, of which paper he became editor, 1896; resigned, 1900. His first story was *A Man from the North*, 1898. In the same year appeared *Journalism for Women*; and the next, *Polite Farcies*—his first plays. His prose fiction, from the first, he divided into novels and fantasias: by the latter (some in collaboration with Eden Phillpotts) he obtained fame and money; by the former, estab. himself as a literary artist. He first attracted the attention of the critical world with a description of life and conditions in the Five Towns of the Potteries, making his name with *Anna of the Five Towns* (1902); and he was at his best when he returned to that theme—for, with all his acquired culture, B. was essentially a provincial. He was understood not to admire Dickens; yet it is in the delineation of the nineteenth-century Eng. eccentric that he, like Dickens, excels. Perhaps his best novel is *The Old Wives' Tale*, 1908. Other later works of fiction are: *Clayhanger*, 1910; *The Card*, 1911; *Hilda Lessways* (sequel to *Clayhanger*), 1911; *The Regent* (sequel to *The Card*), 1913; *The Price of Love*, 1914; *These Twain* (sequel to *Hilda Lessways*), 1916; *The Pretty Lady*, 1918; *Mr. Prohack*, 1922; *Lilian*, 1923; *Riceman Steps*, 1923; *Lord Raingo*, 1926; *The Strange Vanguard*, 1928; *Accident*, 1929. Among his plays are: *Cupid and Common-sense*, 1908; *What the Public Wants*, 1909; *The Honeymoon*, 1911; *Milestones* (with E. Knoblock), 1912; *The Great Adventure*, 1913; *The Title*, 1918; *Judith*, 1919; *The Love Match*, 1922; *Body and Soul*, 1922; *London Life* (with E. Knoblock), 1924; *Mr. Prohack*, 1927. B. resided much in France, and, as touching his personal experiences, wrote *The Truth About an Author*, 1903; *The Reasonable Life*, 1907; *The Human Machine*, 1908; *How to Live on Twenty-Four Hours a Day*, 1912; *From the Log of the Velsa*, 1920; *Things That Have Interested Me* (3 series), 1921, 1923, and 1925; *Journal*, 1930-33. See Georges Lafourcade, *Arnold Bennett, a Study*, 1938; W. Allen, *Arnold Bennett*, 1948.

Bennett, James Gordon (1795-1872), Amer. journalist, founder and editor of the *New York Herald*, *b.* at New Mill, Banffshire, in Scotland. Was educated for the Rom. Catholic priesthood, but emigrated to America in 1819. He founded the *New York Herald* in 1835.

Bennett, James Gordon (1841-1918), son of the above. He succeeded to the management of the *New York Herald* on his father's death, dispatched H. M.

Stanley to Central Africa to find Livingstone, bore half the expense of Stanley's Congo expedition of 1874, arranged the *Jeannette* polar expedition, and promoted, with J. W. Mackay, the Commercial Cable Company in 1883. He *d.* at Nice, May 14; and left money to found a home for journalists in New York.

Bennett, John Hughes (1812-75), Eng. pathologist, *b.* in London. He was educated at Exeter and Edinburgh, and studied for 4 years in Paris and Germany. In 1841 he began to lecture on histology in Edinburgh, and in 1843 was appointed prof. of the institutes of medicine at Edinburgh. This post he resigned in 1874. He pub. numerous treatises on medicine.

Bennett, Richard Bedford, Viscount (*b.* 1870), Canadian statesman. Descended from United Loyalist stock settled in Fundy Bay, his forebears beginning colonial life with a shipyard in N. Brunswick and building ships for riv. and coastwise trade. After taking his law degree at Dalhousie Univ., B. practised in N. Brunswick. Later he went into partnership in Calgary, and entered the Legislature of the N.W. Ter. First became prominent in politics as an opponent of the provisions for separate Catholic schools in the proposed provincial constitutions of Alberta and Saskatchewan. This gave him the leadership of the small band of Conservatives in Alberta's first legislature in 1905. At the 'reciprocity' elections of 1911 he was returned as a Conservative by Calgary by a large majority. He enhanced his reputation by his opposition to the railway policy of the Borden Gov. Being opposed also to the ministerial policy during the First World War, he withdrew from politics in 1917 and resumed the practice of law. Returned again for Calgary in 1925. In 1926 he was minister of finance. Soon in opposition again, he estab. himself as the best parliamentarian on the Conservative side, and was selected in 1927 to take the place of Mr. Meighen as leader, and, thereafter, was chiefly responsible for getting the Conservatives back to power in 1930. Is an ardent champion of protective tariffs. Came to London in 1930 as the head of the Canadian delegation to the Imperial Conference. Presided over the Ottawa (Imperial Economic) Conference, 1932. In the election of Oct. 1935 he sustained the most crushing defeat in the hist. of Canadian politics, the chief issue being the tariff, which was too high for the primary producers, and for United Kingdom manufacturers alike. He was succeeded by Mr. Mackenzie King as premier, and, later, by Manier as Conservative leader. In 1938 he took up permanent residence in England. Created viscount in 1941.

Bennett, Sir William Sterndale (1816-1875), Eng. composer and pianist, *b.* at Sheffield. For 10 years he studied in the Royal Academy of Music and then visited Germany, where, at Düsseldorf and Leipzig, he made the acquaintance of Mendelssohn and Schumann. On his return to England he received a warm reception, and in 1838 was elected member of the

Royal Society of Musicians. In 1849 he founded the Bach Society. In 1856 he became prof. of music at Cambridge, and was engaged as conductor to the Philharmonic Society the same year. This latter post he resigned on being appointed prin. of the Royal Academy of Music in 1866. He received the honorary degree of D.C.L. from Oxford Univ. in 1870, and the following year was knighted. With the exception of opera, B. attempted almost every form of vocal and instrumental composition. *The Naiads* and

Bennigsen, Levin August Theophil, Count (1745-1826), Russian general, *b.* at Brunswick. After a period in the Hanoverian service he entered the Russian army and gained distinction in the Turkish and Polish wars. Aided in the assassination of Tsar Paul V. Commanded the Russian armies against Napoleon at Pultusk (1806) and Eylau (1807) and was present at Borodino (1812) and Leipzig (1813).

Bennigsen, Rudolf von (1824-1902), Ger. Liberal statesman, *b.* at Lüneburg.



BEN NEVIS

A. D. S. Macpherson

The Carn Mhor Dearg *arête* is in the middle ground; beyond is the Allt a'Mhuillin gleu.

The Wood Nymphs (overtures) and *The May Queen* (a cantata) are among his best-known works.

Ben Nevis, highest mt. in the Brit. Isles, situated in the co. of Inverness, Scotland, 4½ m. E.S.E. of Fort William. Its elevation is 4406 ft. The N.E. side is bounded by a precipice of about 1500 ft. in depth. On its summit, which consists of a large plateau, snow lies in some gorges all the year round. An extensive view is obtained therefrom, every mountain of any size in Scotland being visible. From 1881 to 1904 meteorological observations were taken at the summit, and until the erection in 1883 of an observatory and the construction of a bridle road leading up the side of the mt., daily ascents were made for that purpose. The base of the mt., which, in circumference, measures about 30 m., is composed principally of granite and gneiss, while the upper part is formed chiefly of porphyry.

son of a Hanoverian general. Educated at Göttingen. Entered the Hanoverian Second Chamber in 1855. Founded the National Verein to promote Ger. unity and constitutional liberty. The Austro-Fr. war gave impetus to this movement, but B. was unable to preserve neutrality in the later Austro-Prussian war, though, after it was over, he was invited by Bismarck to co-operate in the reform of the Confederation and, the National Verein being dissolved as having fulfilled its function, B. became a member of the Prussian Diet. Declined the post of vice-chancellor, and later became president of Hanover prov. Retired 1897.

Bennington, township of the co. of B., Vermont, U.S.A. It has woollen mills, and manufs. stereoscopes, boxes, and linen. Pop. 7600.

Benoît, Pierre Léonard Léopold (1834-1901), Flemish composer, *b.* at Harlebeke, Flanders. In 1851 B. entered the Brussels

Conservatoire, where he studied till 1855. There he composed an opera, *Le Village dans les montagnes*, for the Park Theatre. His sacred tetralogy consisted of his *Cantate de Noël*, a *Messe solennelle*, a *Te Deum*, and a *Requiem*.

Benoît, Pierre (b. 1886), Fr. novelist, b. at Albi, Tarn. Won an international reputation with his *Count Philip*, a novel which is concerned with the story of the fates of Count Philip Königsmarck, Ernst August, father of George I., and Countess Platen. Among his other more notable works are *L'Atlantide* (1922), and *La Chaussée des géants* (1922) on the Dublin riots of 1916.

Benoît de Sainte-More, Fr. *trouvère* of the twelfth century. He wrote a long poem in octosyllabic verse entitled *Chronique des Ducs de Normandie* at the suggestion of Henry II. of England. His *Romanse of Troy* is based on the *Historia de excidio Trojæ* of Dares Phrygius, and the *Ephemerides belli Trojani* of Dictys Cretensis. The story, told as though it were a medieval romance, commences with Jason's theft of the Golden Fleece and ends with the return of the Gr. heroes after the sack of Troy. B. is also supposed to be the author of *Enéas* and the *Roman de Thèbes* (based on Statius).

Ben-Rhydding, hydropathic establishment in the W. Riding of Yorkshire, on the bank of the R. Wharfe, 16 m. N.W. of Leeds.

Bensberg, vil. of the Rhineland, in the dist. of Cologne, Germany, about 10 m. E. of Cologne. B. has rich lead, iron, and zinc mines. Pop. 4,500.

Bensheim, tn. of Hesse, 14 m. S. of Darmstadt, Germany. Pop. 10,000.

Bensley, Thomas (d. 1833), Eng. printer and producer of some of the finest and most magnificent books of his period. His chief production was Macklin's folio Bible, and his octavo Shakespeare is also well known.

Benson, Arthur Christopher (1862-1925), Eng. author and essayist, the eldest son of Archbishop B. Educated at Eton and King's College, Cambridge, he became a master at Eton in 1885, continuing there until 1903; when he was elected a fellow of Magdalene College, of which he became master, 1914. In 1886 he produced his first work of fiction (*The Memoirs of Arthur Hamilton*) under the pseudonym of Christopher Carr. Two vols. *Poems and Lyrics*, pub. in 1893 and 1895 respectively, gave him a reputation as a writer of verse. Further literary productions of his were: *A Study of Archbishop Laud*, 1887; *Lord Vylat and other Poems*, 1897; *The Life of Archbishop Benson*, 1899; *Fasti Etonenses*, 1899; *The Schoolmaster*, 1902; *The House of Quiet*, 1904. Monographs in the English Men of Letters series on *D. G. Rossetti*, 1904; *Edward Fitzgerald*, 1905; *Walter Pater*, 1906. *Peace and other Poems*, 1905; *The Upton Letters*, 1905; *From a College Window*, 1906; *The Thread of Gold*, 1906; *Beside Still Waters*, 1907; *Joyous Gard*, 1913; *The Orchard Pavilion*, 1914; *Hugh* (memoir of his brother), 1915; *Meanwhile*,

1916; *Cambridge Essays on Education*, 1917; *Magdalene College*, 1923; *Memories and Friends*, 1924; *Chris Gascoyne*, 1924; *The Canon*, 1926; *Basil Netherby*, 1926; *Crassage*, 1927. The last 4 are novels. He also ed. with Lord Esher *The Correspondence of Queen Victoria*, 1907; and he wrote the words of *Land of Hope and Glory*, for which Elgar composed the music. See E. H. Ryle, *A. C. Benson as seen by some Friends*, 1925.

Benson, Edward Frederic (1867-1940), Eng. author, b. at Wellington College, July 24, the son of Edward White B. (q.v.). He was educated at Marlborough and King's College, Cambridge. From 1892 to 1895 he was engaged in investigations at Athens on behalf of the Brit. Archaeological Society. In 1893 he pub. his first novel *Dodo*, a story of society life. Other novels: *Vintage*, 1898; *The Capsina*, 1899; *The Challoners*, 1904; *The Image in the Sand*, 1905; *The House of Defence*, 1907; *The Osbornes*, 1910; *Dodo the Second*, 1914; *The Countess of Lowndes Square*, 1920; *Dodo Wonders*, 1921; *David of King's*, 1924; *Mezzanine*, 1926; *Paying Guests*, 1929; and *Travails of Gold*, 1933. He was also the author of 2 plays, *Aunt Jeannie* (1902) and *Dinner for Eight* (1915). His study of the life of Charlotte Brontë was pub. in 1932, and *King Edward VII.* in 1933. He dealt with the hist. of his own times in 2 vols. of memoirs, *As We Are* (1932) and *As We Were* (1934).

Benson, Edward White (1829-96), Eng. archbishop, b. at Birmingham. Entering Trinity College, Cambridge, in 1848, he was elected fellow in 1853. From this date until 1859 he was a master at Rugby, being appointed in the latter year head master of the newly opened Wellington College. In 1868 he was made prebendary, and 3 years later, chancellor of Lincoln. In 1877 he was transferred to Cornwall to become the first bishop of Truro, and on the death of Dr. Tait in 1883, succeeded him as archbishop of Canterbury. As primate he cultivated cordial relations with the E. churches. He imparted new vigour to church life in England and reorganised the internal administration of the Church. Many of his numerous writings possess considerable scholastic and antiquarian value.

Benson, Sir Francis Robert (1858-1939), Eng. actor manager; educated at Winchester and Oxford. While at Oxford he played the part of Clytemnestra in the *Agamemnon* of Æschylus, and one result of this was that he was invited to join Sir Henry Irving's company at the Lyceum. In 1883 he founded a Shakespeare repertory company, which continued until 1916, giving performances not only in London and the provs., but also in U.S.A. and Canada. In 1920, after the war, a new company was started, and toured S. Africa. B. himself played about 100 parts, the majority from Shakespeare, and estab. a school of acting, which had a marked influence on the Eng. stage. He was also responsible for many of the Shakespearean festivals at Stratford upon Avon. He was knighted in 1916, and in 1934 awarded a civil list pension of

£100 in recognition of his services to drama. In 1886 he married Gertrude Samwell, who was a member of his company under the name of Constance Featherstonhaugh.

Benson, Robert Hugh (1871-1914), author and priest of the Rom. Church, the son of Edward White B. (*q.v.*). He was educated at Eton and Cambridge, and held curacies for some years as a priest of the Established Church. He wrote both novels and religious works. Some of his novels are historic romances and most of his later works of fiction are vehicles for Catholic propaganda. The best known are: *The Light Invisible* (1903), *By What Authority?* (1904), *The King's Achievement* (1905), *The Sentimentalists* (1906), *The Queen's Tragedy* (1906), *Lord of the World* (1907), *The Conventionalists* (1908), and *The Dawn of All* (1911). His poems were pub. shortly after his death. See *Hugh* (1915) by Father C. C. Martindale and life (1916) by his brother, A. C. Benson.

Benson, R. M. (1824-1915), Eng. missionary and founder of the Cowley Brotherhood, which restored the community life of the Church in England. Author of *Spiritual Readings* (1879) and *War Songs of the Prince of Peace* (1901), both mystical in conception.

Benson, Stella (1892-1933), Eng. novelist, b. at Much Wenlock, Shropshire, a niece of Mary Cholmondeley (*q.v.*); educated privately. During the First World War she worked in London on social services, for the women's vote movement, and on the land. Later for reasons of health travelled in the U.S.A. In 1921 she married J. C. O'Gorman Anderson of the Chinese Customs Service, and lived in China where she d. on Dec. 7. Her novel *Tobit Transplanted* won the Femina Vie Heureuse prize in 1931. She left a journal of 20 vols. to Cambridge Univ. for publication in 50 years' time. Other novels: *I Pose*, 1915; *This is the End*, 1917; *Living Alone*, 1919; *Good-bye, Stranger*, 1926. Her short stories have been pub. in a collected ed. See R. Ellis Roberts, *A Portrait of Stella Benson*, 1939.

Bent, James Theodore (1852-97), Eng. traveller and archaeologist, b. near Leeds. He was educated at Repton and Oxford (Wadham College). He visited Italy and Greece, and in 1885 began investigations in Asia Minor. In 1891 he visited S. Africa, exploring the great Zimbabwe ruins in Mashonaland. In 1893 he explored parts of Arabia and Abyssinia. Chief works: *The Cyclades, or Life among the Insular Greeks*, 1885; *The Ruined Cities of Mashonaland*, 1892; *The Sacred City of the Ethiopians*, 1893.

Bent Grass, name applied to many varieties of Gramineæ under the generic name of *Agrostis* which grow in a N. temp. *A. alba*, the white B. G., marsh B. G., or florin grass, is valuable as food for cattle; it creeps along the ground and roots at the nodes of its bent and wiry stems. *A. (or Apera) spica-venti* is the silky B. G., or windward-spiked grass, which is found commonly in Britain. *A. vulgaris* and *A. stolonifera* are varieties

of *A. alba*; *A. canina* is the brown B. G. which grows on peaty soil.

Bentham, George (1800-84), Eng. botanist, b. at Stoke, near Portsmouth. A nephew of Jeremy B., he was attracted to the study of botany through the applicability thereto of the analytical methods learnt from his uncle. For some years he lived in France managing his father's estate, eventually coming to England to study law and to assist his uncle. On his uncle's death in 1832 he was able to follow up more fully his scientific inclinations, and finally in 1842 he removed to Herefordshire to devote himself entirely to science. The cost of maintaining his herbarium proved too expensive, however, and in 1854 he presented his collection to Kew Gardens, and himself resided and worked there until the year of his death. He produced sev. important treatises on botany, the chief being *Genera Plantarum*.

Bentham, James (d. 1794), Eng. writer on architecture. Educated at Trinity College, Cambridge, he became prebendary of Ely Cathedral in 1779. B. directed his attention to the study of church architecture, and his *History of the Church of Ely* was pub. in 1771.

Bentham, Jeremy (1748-1832), Eng. writer on law and political economy; the son of Jeremiah B., a solicitor of London. Educated at Westminster and Oxford. Studied law and was called to the Bar about 1772, but did not practise to any great extent. He had attended, at Oxford, Blackstone's lectures on Eng. law, but was not satisfied with him. His first publication, *Fragment on Government*, 1776, was an attack on Blackstone, and was attributed by Johnson to Dunning. In 1780 he wrote his *Principles of Morals and Legislation*; it was printed but not pub. until 1789. In 1785 he went abroad and travelled over the greater part of Europe, and on his return in 1791 pub. his *Panopticon, or The Inspection House*, a valuable work on prison discipline. This was his proposed circular prison with cells round the warders' well in the centre, and it was taken up by the Gov., experimented upon at great expense, and dropped. At this time B.'s fame abroad was greater than here, and every embryo republic looked to him. Borrow met an *alcaide* near Finisterre who spoke of the 'great Baintham.' From about 1817 on he was a bencher of Lincoln's Inn; he d. at Westminster. He left his body to be dissected, and the skeleton may be seen at the Univ. College, London. Among his other works are *Discourse on Civil and Penal Legislation*, 1802; *Punishments and Rewards*, 1811; *Parliamentary Reform Catechism*, 1817; *A Rationale of Judicial Evidence*. The prophet of utilitarianism and the herald of all manner of social and legal reforms, the greatness of B. grows with time and with the realisation of his amazing grasp of so many and diverse subjects, his power of unerring prophecy, and his universal tolerance in an age which, judged by modern standards, was harsh in the extreme. The older Benthamites had misjudged him. Even

thinkers like James Mill regarded him as a visionary, an obscure jurist among greater jurists, a kind of catfish among the lawyers, a philosopher whose hedonistic calculus was devoid of practical value, and the defender of moneylenders. This misconception was due to his works not being read or not closely read by those who criticised him. The human and sensitive B., too, was forgotten in this hasty appraisal. The reforms for which B. was directly or indirectly responsible in the process of time, eloquently proclaim alike the catholicity of his learning and the liberality of his opinions. These reforms include the reform of the representative system of Parliament; the mitigation of the terrible criminal law, the abolition of transportation, and the improvement of



JEREMY BENTHAM

prisons; the abolition of imprisonment for debt; the overhauling of the jury system; reforms in merchant shipping; the introduction of uniform and scientific methods of drafting Acts of Parliament; the reform of the Poor Laws; the abolition of religious tests; the development of savings banks, friendly societies, cheap postage, census returns, registration of births and deaths, real property registration, national education, protection of inventors, and public health legislation. It is also to be remembered that B., in his proposals for perpetual peace in the shape of a congress or diet working towards disarmament and the abolition of secret diplomacy, gave what was practically an outline of the modern Covenant of the League of Nations. (On this last point see C. John Colombas, *Outline of League of Nations Constitution*—Grotrius Society Publications.) B. also played no inconsiderable part in the building up of the Brit. Empire, in which connection the colonisation of Australia and the Indian penal code both owed much to his inspiration. It is small

wonder that Talleyrand could say of him, 'Pillé par tout le monde, il est toujours riche.' B.'s numerous works have never been adequately or completely pub., a number of MSS. and much correspondence never yet having been printed. His total output would probably fill some 50 vols. of the size of the *Traité*. His works, in 11 vols. (closely printed), including a biography and selected letters, were ed. by Sir John Bowring (q.v.), 1838-43. Bowring also ed. the *Deontology*, 1834. B.'s MSS. are preserved and catalogued in Univ. College, London Univ. (consult T. Whittaker's *Report*, 1892). There are translations of his works in most languages, in which connection it may be recalled that B., early in his career, was almost a Frenchman. The work of Prof. Élie Halévy, of the Ecole Libre des Sciences Politiques, Paris, has done much to make B. and his work better known to the scholars of his native land. Other works on B. are A. C. Doyle, *Jeremy Bentham*, 1899; Atkinson, *Study of the Life and Work of Bentham*, 1903; W. R. Sorley, *Bentham and the Early Utilitarians*, 1914; Graham Wallas, *Jeremy Bentham*, 1922; C. Philipson, *Three Criminal Law Reformers*, 1923; *Jeremy Bentham: a Commentary on the Commentaries; A Commentary on William Blackstone's Commentaries*—printed for the first time from the Author's MSS., with an introduction and notes, by C. W. Everett, 1928; and *Theory of Legislation*, ed. by C. K. Ogden, 1931.

Bentham, Sir Samuel (1757-1831), Eng. naval architect and author of sev. works on naval administration, was the brother of Jeremy B. He travelled for some years in Russia, and became an officer in the Russian service. On his return to England he became inspector-general of naval works.

Benthamia, genus of plants of the natural order Cornaceae. *B. frugifera*, a native of India, is found to thrive in the open air in the S. of England. It possesses a mulberry-like fruit and a fragrant bloom.

Bentheim, dist. of Lower Saxony, Germany, including the forest of B., where is situated the old castle of the counts of B. Pop. 60,000. The chief tn. of the dist., B., is celebrated for its sulphurous mineral springs, and before 1939 had manufs. of bricks, and cotton-weaving. Pop. 4200.

Bentinck, William, first Earl of Portland (c. 1649-1709), the son of Henry B. of Diepenheim, Overijssel. In his youth he was attached to the Orange household and grew to be William III.'s friend and confidential adviser. He negotiated William's marriage with Mary, daughter of James II., and was entrusted with the preparations for William's landing in England in 1688, the success of which placed William and Mary on the Eng. throne. B. was rewarded for his services by being created Earl of Portland and receiving other honours.

Bentinck, William Henry Cavendish, third Duke of Portland (1738-1809), Eng. statesman. Entered Parliament as a Whig in 1761, and held office under

Rockingham in 1765 and 1782. Was put forward as nominal leader of the coalition ministry by Lord North and Fox in Apr., 1783; but growing weary of Whig dissensions, he withdrew into private life soon after its defeat in the following Dec. With the events of the Fr. Revolution his interest in politics reawakened, and for 7 years he was home secretary in Pitt's Tory administration. As leader of the 'Ministry of All the Talents' in 1807 he was second time Prime Minister, but being unequal to the task, resigned in Oct. 1809.

Bentinck, Lord William Henry Cavendish (1774-1839), Eng. general and administrator, second son of the third duke of Portland. Entered the army in 1791, and in 1803 was nominated governor of Madras. He introduced reforms which provoked a Sepoy mutiny, and was recalled in 1807. In 1808 he was sent to Portugal and served under Sir J. Moore at Corunna. Subsequently he commanded the Brit. forces in Sicily until 1814. He succeeded Lord Amherst as governor-general of India in 1827. During a successful administration lasting 8 years he introduced many reforms. On his return to England he sat as M.P. for Glasgow.

Bentinck, Lord William George Frederick Cavendish (1802-48), Eng. politician and sportsman, the third son of the fourth duke of Portland. Entering the army in 1819, he retired in 1822 to become private secretary to his uncle, George Canning, whom, in 1828, he succeeded as M.P. for Lyme Regis. At first professing no party, he afterwards attached himself to the Conservatives and voted with them until 1846, when he became leader of the Protectionist party, created in consequence of Sir R. Peel's conversion to Free Trade principles. Lord George became a vigorous speaker in Parliament, displaying an intense bitterness towards Peel.

Bentivi, or Bienteveo, *Tyrannus sulphureus*, a species of Tyrannidae. The former is the Portuguese and the latter the Sp. name of the bird. It is related to butcher-birds and shrikes, and feeds on carrion and reptiles. W. H. Hudson gives its scientific name as *Pitangus boliviensis*. He states that it has a wide range in S. America down to Buenos Aires, and that it is named from its trisyllabic cry in which some people fancy there is a resemblance to the words *Bien te veo* (I see you well).

Bentivoglio, Ercole (1506-73), It. poet, b. at Bologna, grandson of Giovanni B. (q.v.). He was employed by the house of Este in sev. important missions. He wrote some satires, which were considered next in merit to those of Ariosto, and also sev. comedies.

Bentivoglio, Giovanni, son of Annibale B., who, after being for some years at the head of the commonwealth of Bologna, was murdered by a rival faction in 1445. Giovanni was then a boy of 6 years of age, but in 1462 he made himself master of Bologna. Though stern and vindictive in his gov., B. was a patron of the arts

and of learning; he adorned Bologna with fine buildings and made collections of statues and paintings, and of MSS. Pope Julius II. expelled him from Bologna in 1506, and after 44 years' dominion he was obliged to escape with his family into the Milanese ter., where he d. 2 years afterwards at the age of 70. His 2 sons were replaced by the Fr. in 1511 at the head of the gov. of Bologna, but in the next year, the Fr. being obliged to leave Italy, Bologna surrendered again to the pope in June 1512, and the Bs. emigrated to Ferrara, where they settled under the protection of the duke d'Este.

Bentivoglio, Guido (1579-1644), It. statesman, b. at Ferrara, was a descendant of the Bs. who had been rulers of Bologna in the preceding century. He studied at Padua, and returned to Ferrara in 1597. When Guido in 1601 proceeded to Rome he was made a prelate of the papal court. After the death of Clement in 1605 his successor, Paul V., sent him as nuncio to Flanders, where he wrote his historical work on the insurrection of that country against the Spaniards in 1566 (*Della Guerra di Fiandra*, in 3 parts, 3 vols., Cologne, 1632-39). In 1616 B. was sent as nuncio to France, where he won the favour of Louis XIII. and his court by the courteousness of his manners and his prudence in diplomatic affairs. The other works of B. are: *Relazioni fatte in Tempo delle Nunziature di Fiandra e di Francia*, Cologne, 1630. It was trans. into Eng. by Henry, earl of Monmouth, 1652. *Memorie con le quali describe la sua Vita*, 8vo, Amsterdam, 1648: this is a sort of diary of his life, pub. after his death. *Lettere*, 8vo, Rome, 1654.

Bentley, coal-mining tn. (Bentley-with-Arksey) of the W. Riding of Yorkshire, England, near Doncaster. Pop. 16,000.

Bentley, Richard (1662-1742), Eng. divine, scholar, and critic; b. at Oulton, Yorkshire, of humble parents; educated at Wakefield and St. John's College, Cambridge. He became a schoolmaster at Spalding, 1682, but left this to be private tutor to the son of Dr. Stillingfleet (afterwards bishop of Worcester). He accompanied his charge to Oxford, and was soon admitted to the degree of M.A. Here he had access to the Bodleian library, and made the friendship of Mill, the editor of the Gk. Testament, and Bernard, then Savilian prof. He laid the foundation of his reputation in a dissertation on an obscure chronicler, John Malelas or John the Rhetor (real name John of Antioch), which was pub. with an appendix to Dr. Mill's ed. of the author in 1691. In 1692 he was appointed keeper of the King's Library, and in 1694 Boyle Lecturer; his degree of D.D. he took at Cambridge in 1696. To the ed. of Callimachus by Grævius in 1697, he contributed a collection of fragments of that poet. Now it was that his famous quarrel with the Hon. C. Boyle began; the latter was to edit the *Epistles of Phalaris*; and noticing (rightly or not) some want of courtesy on the part of B. regarding the loan of a certain manuscript in the king's library, animadverted upon it with some potulence in

his preface. B., who had decided before (as was right) that these epistles were spurious, said so in Wotton's *Reflections on Ancient and Modern Learning*, and criticised Boyle's performance with some asperity. Whereupon all the wits of Christ Church, chief among whom was Atterbury, set their heads together and wrote an answer, to the delight of the tn., with whom the arrogant B. was in little favour. Theirs was the wit, but B. had the learning. In 1700 he became master of Trinity College, Cambridge, and next year he married. He helped Küster with an ed. of Suidas, and pub. an ed. of Horace, 1711; he wrote 2 critical letters on Aristophanes, and in 1708 sent to Hemsterhuis a valuable letter containing emendations of the fragments of comic writers in Julius Pollux's *Onomasticon*, an ed. of which Hemsterhuis had just pub. If his learning was great, his manners were harsh and overbearing, and he quarrelled with the seniors. He was deprived by the visitor, Bishop Greene, but B., by a number of expedients, resisted the deprivation for 4 years, and the matter was dropped. In 1717 he was, by his bold and unscrupulous manoeuvres, elected regius prof. of divinity; litigation followed as usual, and as usual B. won. He effected the publication of Cote's ed. of Newton in 1709. His valuable ed. of Terence appeared in 1726. He undertook an ed. of *Paradise Lost* in 1731, supposing that Milton's amanuensis was likely to have committed blunders in taking down the poet's words; if his criticisms and emendations are prosaic, they are ingenious, and though he was unable to appreciate the effect on Milton of It. poetry and romantic study, yet Pope, who was no genius at editing himself and in the matter of verbal criticism was not worthy to comb B.'s wig, had no business to put him into the *Dunciad*. Of B. we can only say that what he lacked in manners and modesty (and he lacked a good deal) he made up in learning. His style was strong and flexible. Swift's *Battle of the Books* is an account of B.'s quarrel with Boyle. See J. H. Monk, *Life of Richard Bentley*, 1830; Sir R. C. Jebb, *Bentley*, 1882; H. C. Beeching, *Francis Atterbury*, 1909; J. W. Mackail, *Bentley's Milton*, 1924.

Bentley, or **Bently**, vil. of Hampshire, England, 4 m. S.W. of Farnham in the Petersfield div. Pop. 800. A considerable amount of Rom. pottery, belonging to the third century, was unearthed in 1945 in a part of Alice Holt Forest near B.

Benton, Thomas Hart (1782-1858), Amer. statesman, b. at Hillsborough in N. Carolina. He represented Missouri in the U.S.A. Senate 1821-51, being eventually rejected on account of his opposition to slavery. His attitude on this question, his opposition to the proposed establishment of a U.S.A. bank, and his advocacy of Amer. expansion in the W., made him prominent in Amer. politics. He d. at Washington.

Benton Harbor, tn. and health resort of Michigan, U.S.A., in Berrien co., 50 m.

E.N.E. of Chicago, with mineral springs and various manufs. Pop. 15,400.

Benué (also Binué and Benuwé), largest and most important affluent of the R. Niger, W. Africa, which it joins at Lokoja, 230 m. above its mouth. It rises in Adamawa, and flows through fertile country, navigable for 700 m., thus affording a highway into the centre of Sudan. Explored by Baikie in 1854 and 1862, and Flegel, 1879-83.

Ben Venue, mt., 2393 ft. high, on Loch Katrine, Perthshire, Scotland, 9 m. W. of Callendar.

Benvenuto, or **Tisio da Garofalo** (1481-1559), It. painter, last representative of the Ferrara school, and follower of Raphael. In the church of San Nicolo at Ferrara he painted in 1520 the 'Virgin Mary and Infant Jesus,' in the church of Santa Maria de' Servi the 'Nativity,' and in San Lorenzo the 'Adoration of the Magi.' His best work is a 'St. Sebastian, St. Roch, and St. Demetrius' in the National Gallery, London.

Benvenuto Cellini, see CELLINI, BEN-VENTUTO.

Ben Vorlich, Scottish mts.: 1. 3224 ft. high, in Perthshire, 7 m. N. of Callendar; 2. 3092 ft., in Dumbartonshire, 13 m. E. by N. of Inveraray.

Ben Wyvis, mt., 3429 ft. high, in Ross, Scotland, 8 m. N.W. of Dingwall.

Benyowsky, Mauritus Augustus, Count de (1741-86), magnate of Poland and Hungary; Austrian soldier and adventurer; b. in Nitria in Hungary; 1756 fought in the Seven Years war. In 1767 he went to Poland to help to resist the encroachments of the Russian Empress Catherine; he was captured and imprisoned at Kazan, but succeeded in joining a Russian conspiracy against Catherine; it failed, and he escaped with one conspirator. At St. Petersburg he was captured again and banished to Kamchatka; escaped once more with 85 other exiles, took ship and went to France. On his arrival there he had permission from the Gov. to form an establishment in Madagascar, where he ultimately lost his life. See his *Travels*, trans. into Eng., 1790.

Benzaldehyde (C_6H_5CHO), colourless liquid with an odour of bitter almonds. It is produced naturally in bitter almonds, cherries, and peaches in the form of amygdalin (q.v.). It is also prepared from toluene which is converted into benzal chloride and then heated with milk of lime. Alternatively, toluene is oxidised by means of chromyl chloride, or a mixture of manganese dioxide and sulphuric acid with copper sulphate as catalyst. See ALMONDS, OIL OF.

Benz, Karl (1844-1929), Ger. engineer, who, as long ago as 1885 built a motor-car driven by benzine at a speed of 15 m. p.h. His work was a valuable basis for subsequent developments of the internal combustion engine.

Benzamide ($C_6H_5CONH_2$), organic compound formed by acting upon ammonia with benzoyl chloride. It crystallises in leaflets which melt at 130° C. and boil at 288° C.

Benzedrine, α -benzyl-ethylamine ($C_9H_{11}CH_3, CH(CH_3)NH_2$). It may be inhaled under medical advice to relieve hay fever, etc. Administered internally, it is a powerful nerve stimulant, and produces a temporary sensation of well-being.

Benzene (C_6H_6), compound of carbon and hydrogen produced in the distillation of coal-tar. It occurs naturally in Borneo petroleum. It was discovered by Faraday in 1825 as produced in the distillation of certain oils and fats, and Hoffman in 1845 showed that it was a constituent of coal-tar. To separate the various hydrocarbons in coal-tar, the substance is distilled in a tar-still, the products being drawn off at different temps. The first fraction is taken up to $210^\circ C.$, and contains a large percentage of B. The distillate, known as 'light oil,' is again fractionated, producing separate distillates of 'first runnings,' 'heavy benzols,' and 'carbolic oil.' A further distillation of the benzols in a steam-still produces pure or nearly pure B. B. is a light, colourless liquid with a pleasant odour. It crystallises in rhombic form at $0^\circ C.$, melts at $5.4^\circ C.$, and boils at 80.4° . It is insoluble in water, but dissolves in alcohol, ether, acetic acid, and carbon disulphide. It readily dissolves gums and fatty substances, as well as phosphorus, sulphur, and iodine. B. is interesting chemically as being the parent of the aromatic compounds. The atoms of carbon are represented in a graphic formula as being arranged in a closed ring, each atom being connected with an atom of hydrogen. The replacing of these atoms by other atoms or groups gives rise to a large number of derivatives, which have in general more strongly marked characteristics and are more stable than the aliphatic or fatty compounds. B. is used commercially as a solvent, and as a starting-point in the production of many valuable dyes. The name is often applied to *benzol*, which consists of B. and toluene. This mixture is largely employed as a fuel for internal combustion engines. *Benzine* (q.v.) is a distillate from American petroleum, and is much used as a solvent. *Benzoline* is a name applied to a form of benzene; it is used as a solvent and as a fuel.

Benzil ($C_6H_5CO \cdot CO \cdot C_6H_5$), organic solid, crystallising in trapezohedra, m.p. 95° . It is produced by treating benzoin with chlorine and nitric acid, or by fusing it with an alkali.

Benzine, volatile liquid obtained from petroleum. The name has been applied, however, to different organic compounds. The hydrocarbon now known as benzene (C_6H_6) was originally known as B., and the name was afterwards and is still applied to the partially purified coal-tar which contains benzene as its prin. constituent. The term B. is, however, most commonly applied to the lower boiling-point fractions in the distillation of petroleum, and has thus a kinship with petrol, petroleum spirit, motor spirit, benzoline, etc. It is valuable as a solvent, and is used for cleaning wearing apparel, etc.

Benzoic Acid ($C_6H_5 \cdot COOH$), aromatic acid, occurring naturally in some resins, especially gum benzoin and in Peru and Tolu balsams. It may be obtained from gum benzoin by sublimation, from toluene by oxidation and from hippuric acid by hydrolysis. It crystallises in light feathery plates, which melt at $121.4^\circ C.$ and boil at $250^\circ C.$ It is readily soluble in hot water, alcohol, etc. When heated with lime, benzene is produced, and salts called benzoates are formed by combination with the oxides of many metals. In medicine it is used as an antiseptic, expectorant, and diuretic. Moderate doses remain unchanged in the blood, but unite with glycocholl in the kidneys to form hippuric acid. It is useful in mild chronic cystitis and in urethral affections.

Benzoin (from Arabic *luban java* (*lubān-jawī*), incense of Java), balsamic resin obtained from *Styrax* B. It is produced by cutting the bark of trees, and is apparently the result of the wound, and is not secreted by the plant under ordinary conditions. There are different varieties containing varying proportions of the active ingredient, benzoic acid, while in some samples this is partly or wholly replaced by cinnamic acid. B. has a fragrant odour, and is much used for incense, perfumery, and pastilles. It became a favourite medicament on account of its antiseptic property and its soothing influence in affections of the respiratory organs. The most popular form of the medicine is the compound tincture, or friar's balsam, which is used externally for sores, ulcers, etc., and internally for throat troubles. Inhaling the vapour produced by adding a small quantity of friar's balsam to hot water may give relief for catarrh and influenza.

Benzoline, mixture of hydrocarbons (also known as benzene, petroleum spirit, or petrol). It is not a definite chemical compound, and consists of the lighter fractions in the distillation of petroleum or paraffins. It is used as a solvent in industry, and in medicine for heating cauteries and for cleansing the skin in acne. It is also used in oil engines to provide the inflammable vapour which, mixed with air, produces the explosion or expansion of gases which actuates the piston. It must be distinguished from benzol or benzene, which are products of coal-tar distillation, though, like them, it has valuable solvent powers.

Benzoyl, hypothetical organic radicle represented by the formula $C_6H_5 \cdot CO$. In 1832 Baron Liebig, in association with F. Wöhler, pub. a paper showing that throughout a series of compounds formed from benzaldehyde, or oil of bitter almonds, a group which he called B. behaved as a unit. A new era in chemical theory was thus inaugurated which led to far-reaching results.

Benzoyl-glycocholl, see HIPPURIC ACID. **Benzyl Alcohol** ($C_6H_5 \cdot CH_2OH$), or **Phenyl Carbinol**, organic compound found in Peru and Tolu balsams and in storax. It may be prepared by reducing benzoyl chloride or by shaking up caustic potash with benzaldehyde, when the product

is partly sodium benzoate and partly benzyl alcohol. It is a colourless liquid with a pleasant odour, and boils at 206° C.

Benzyl Chloride ($C_6H_5CH_2Cl$), organic substance produced by the action of chlorine on boiling toluene. By the addition of potassium carbonate, benzyl alcohol is produced, and heating with lead nitrate produces benzaldehyde, or oil of bitter almonds.

Beowulf, an epic poem, and considered the most valuable example of O.E. and early Germanic literature. It consists of a MS. written about A.D. 1000, and contains the O.E. poem *Judith*. It is now in the Brit. Museum, where it is bound with other MSS. in the Cottonian collections. The poem relates the deeds of B., nephew of the king of the 'Geatas' (the people). Briefly, the story describes how B. sails to Den., accompanied by 14 companions, to help his brother Hrothgar, the Danish king, whose domains are ravaged by a monster of human shape called Grendel. In the encounter between B. and Grendel, the voracious monster's arm is torn from the shoulder, but though mortally wounded, the creature escapes, leaving bloody tracks which lead to a distant lake. The deserted hall, called Heorot, is once more inhabited, but Grendel's mother appears and carries off a Danish noble. B. undauntedly follows her, and plunging into the water of the lake, kills her in a vault under the waves. He finds Grendel's corpse here, and securing the head, returns to Heorot, where he is welcomed with acclamation. The king of his native land rewards him with lands, and on his death B. is proclaimed king. Fifty years pass, and now B. himself is suffering from the incursions of a monster in the shape of a fiery dragon. B. is just able to kill the fire-breathing dragon, by the aid of a young man named Wiglaf. But he is mortally injured, and with his dying breath ordains Wiglaf his successor. See ed. by F. Klaeber (1922); also trans. into modern Eng. by William Morris (1892) and Gavin Bone (1946).

Bequeath, Bequest, 2 words strictly applicable in Eng. law to the disposition of personal property by will, 'devise' being the technical term applicable to dispositions of real property. See **WILLS AND TESTAMENTS**.

Berabra, Nubian people of Egypt, of negro stock, chiefly found in the neighbourhood of the Nile from Assuan to Wadi Halfa. They are also found in Kordofan and Dar-Fur. They are intelligent, and quick to acquire new methods of agriculture, which is their chief employment. In religion they are Muslims.

Berseans, see **BEREANS**.

Béranger, Pierre Jean de (1780-1857), Fr. poet, b. in Paris. His father left his mother only 6 months after the marriage, and B. was cared for by his grandfather, Champy, a tailor. At the age of 9 he was transferred to the protection of an aunt, who kept an inn at Péronne. Her vigorous republican ideas were passed on

to her nephew. He became a printer's apprentice for 3 years at the age of 14, subsequently acting as a clerk in the service of his father, who had acquired a fortune, and who soon afterwards lost it. B. took up his abode at Paris after this, and devoted himself to literature. At this time he lived in a garret, which forms the subject of one of his songs. Adversity shattered some of his dreams, and he was forced to solicit help from Lucien Bonaparte. Three years later he was given a position as clerk in the Imperial Univ., through the influence of the poet Arnault. In 1815 he pub. his first collection of songs, and was immediately hailed as the foremost of his country's song-writers. His popularity increased, and also his courage in airing revolutionary ideas, for which in 1821 he was imprisoned in St. Pélagie. By his influence with the people, especially with the younger generation and those immersed in militant politics, no less than by the irresistible effect of his songs, he contributed largely to the downfall of the Bourbons. Many of his best-known verses were printed satires against the gov. which succeeded the fall of Napoleon. The mocking irony of his famous *Roi d'Yvetot*, saluting the awakening of more truly liberal ideas, had a pronounced effect at a time when it seemed that no other voice might be heard than the emperor's. Moreover, legal process seemed to have no terrors for him. He met prosecution with good-humoured wit, and his second trial, that of 1828, receded on his antagonists. He was condemned to 9 months' imprisonment and to pay a fine of 10,000 francs, but, in thus striking at him, the gov. enhanced his political significance and sharpened the sting of his *recueils*, which caused them so much perturbation. The song, *Vieux Drapeau*, with its vigorous refrain,

Quand secoutrai-je la poussière
Qui ternit ses nobles couleurs,

was reprobated by the prosecution as a 'kind of *Marseillaise* for the use of the brigands of the Loire.' B.'s fine was paid by public subscription, and his popularity increased as a result of his conviction. In 1830 *Chansons nouvelles* were pub., and 10 years later his life story. In 1848 he was elected to enter the Constituent Assembly, but he resigned shortly afterwards, seeking a retirement in which he lived until his death. The versatility of theme and delicacy of his humour and pathos easily explain his hold upon a public so warm as the working class of France, while his technique and literary quality endeared him no less to the literary scholars of his day. The friend of his life, whom he did not long survive, was Mlle Judith Frère. He commemorated her in *La Bonne Vieille*, but she is not the 'Lisette' of many of his poems. Lisette was an imaginary character, or, at least, no more than a personification of the *folles amours* of youth in the manner of Ronsard, and there is no hint of any such relationship between B. and the highly respectable Mlle Frère. An excellent monograph on B. will be found in

Larousse's *Grand Dictionnaire universel du XIX^e siècle*.

Berar, prov. of India, lying to the N. of the state of Hyderabad. Up to the beginning of the nineteenth century, it was under the rule of an independent rajah with cap. at Nagpur, and later passed to the control of the nizam of Hyderabad, who assigned the ter. to the Brit. in 1853. In 1902 it was leased in perpetuity by the nizam, and incorporated with the Central Provinces on Oct. 1 of that year. It is mainly an agric. dist., yielding cotton and millet. The chief city is Nagpur. Area of the dist., 17,800 sq. m., and the pop., mainly Hindu, is over 3,600,000.

Berat, or **Beligrad**, tn. of Albania, on the Semeri R. in a fertile valley, the cultivation of which is mainly tobacco, vines, and olives. The tn. was occupied by the Austrians and later the Its. during the First World War, and was again the scene of fighting between the It. invaders and the Albanians in Jan. 1941. Pop. 10,000.

Béraud, **Henri** (b. 1885), Fr. dramatic critic and author, b. at Lyons, son of a baker. Was a silk-pattern designer and then a lawyer's clerk. His *Twenty Portraits of the French Revolution* contains vivid descriptions of Mirabeau, Saint-Just, Marat, Vergniaud, Danton, Muc Roland, Charlotte Corday, and Théroigne de Méricourt, but is marred by a blurred historical background. In 1922 he won the Goncourt award for 2 books: *Le Vitriol de Lune*, a political novel on the death of Louis XV., and *Le Martyre de L'obèse*, a humorous story.

Beraun, or **Beroun**, tn. of Czechoslovakia, pop. 11,000 (1938). It has lincolns, textile manufs., sugar refineries, and breweries.

Berber, tn. and prov. in the Sudan, near the junction of the Atbara and the Nile. The tn. was the starting-point of the old caravan route across the Nubian Desert to the Red Sea, at Suakin. Pop. 5000.

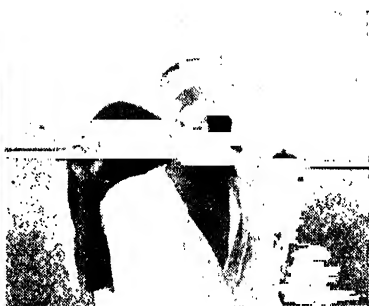
Berbera, or **Berberah**, prin. seaport and tn. in Brit. Somaliland, N.E. Africa, on a bay of the gulf of Aden. It has a good harbour and is a mkt.-place for inland tribes, being known for its large ann. fair. B. was taken by the Its. under Graziani in 1940, but was recaptured on Mar. 17, 1941. Pop. 15,000, which is nearly doubled during the cooler months from Oct. to May, when the fair is held.

Berberidææ, name applied to a group of dicotyledonous plants of the cohort Ranales, which includes the Berberidaceæ and Lardizabalaceæ. The juice usually stains yellow, and the bark or stem is bitter and used medicinally.

Berberis, genus of Berberidaceæ containing 100 species found in S. America and mountainous dists. of the tropics. The most common species occurs as a shrub in Britain, and is known as barberry (*q.v.*).

Berbers, term applied to the different branches of the indigenous inhab. of N. Africa, who have inhabited the region between the Mediterranean and the

Sahara since the earliest times. The derivation of the name is yet undiscovered, though it may have come from the Gk. *βαρβαροι*, barbarians. Egyptian inscriptions of the seventeenth and thirteenth centuries B.C. speak of the Barabara and Beraberata tribes. They were called Lebu, Mashuasha, Tamahu, Tehennu, and Kahaka by the Egyptians. There are a host of tribes called by this term to-day, the main sections being Zouaoua and Jebalia (in Tripoli and Tunisia), the Chauwia, Kabyles, and Beni-Mzab (in Algeria); the Shlûh, Amazigh, and B. (in Morocco); and the Tuareg, Amôshagh, Sorgu (in the Sahara). The word Africa has been traced by some scholars from a tribe called Avrigha, whose descendants, the



A BERBER (KABYLE) OF ALGERIA

Aouraghens, form one of the innumerable lesser groups. The actual origin of the race is still obscure, and it is to be noticed that, notwithstanding the alterations in feature, usually brought about in the process of time by foreign conquest at the hands of successive invaders, the type is still surprisingly like that of the Stone Age. The usual facial characteristics are dark hair and hazel eyes, while the complexion marks them as a 'white' race. The Arabs have been the prin. invaders, and yet the races are almost as distinct as if some barrier had existed between them. In character the B. is independent, sturdy, and self-reliant, honest, intelligent, and scrupulous. The gov. of the Bs. extends over each state, which in most cases is the vill., and there is no attempt at centralisation. Yet the poorest of them has as large a share in the gov. as the richest. They are warlike, and have never yet been thoroughly subdued. Their religion is Mohammedanism, though not strict. B. women occupy an inferior position, and are procurable by purchase, and easily disposed of at will, yet they are protected by laws, and have a voice in making them. See G. Marçais, *Les Arabes berbères du XI^e au XIV^e siècle*, 1913; P. Hacquand-Campredon, *Studies in the Evolution of Kabyle Customs*, 1921; R. Millet, *Les Almohades*:

histoire d'une dynastie berbère, 1923; also works on dialect: S. Bearnay (Rif dialects), 1917; Destaing, 1920; and Laoust, 1920.

Berbice, E. portion of Brit. Guiana. It is bounded on the E. by Dutch Guiana and R. Corentyn. Its area is 21,000 sq. m. In 1831 it was joined to Essequibo and Demerara under one gov., while formerly it formed a distinct prov. Its chief product is sugar, while rum, molasses, timber, cocoa, and tropical fruits are also features of its productions. Magnificent timber forests contain the mora and bullet trees. The R. Berbice is fed by the Canje and is navigable for 175 m. New Amsterdam is the prin. tn. of the div.

Berceo, Gonzalo de (*fl.* 1230). Sp. poet, considered the father of modern Sp. poetry, was one of the earliest poets in the vernacular. He followed the troubadour school of Langue d'Oc. His poems, which were numerous, are chiefly sacred in theme and are composed in single-rhymed Alexandrine quatrains. His most noteworthy poems are *Milagros de Nuestra Señora*, *Vida de Santa Pria*, *Vida de Santo Domingo de Silos*, and *La Estoria de Santo Millan*.

Berceuse (Fr. *berceau*), literally a cradle song; a soft lulling melody with an accompaniment to imitate rocking.

Berchem, suburb of Antwerp, Belgium. It has many fine buildings. Pop. 36,000.

Berchem (or **Bergheim**), Nicolaas (1620-1683), Dutch landscape painter, b. at Haarlem. His work, particularly in his landscapes and etchings, is held in esteem. Some of his best pictures are in the museum at Amsterdam. He d. at Haarlem.

Berchta (the original of the Eng. Bertha), fairy in S. Ger. legend. She corresponds to Hulda (gracious, bonign) in N. Ger. mythology.

Berchtesgaden, tn. of Upper Bavaria, Germany, situated at a height of 1700 ft. on the Untersberg, 12 m. S.W. of Salzburg. Its royal castle was formerly a Franciscan hospice. It has mines of rock-salt, which were worked as far back as 1174, and, in normal times, it is frequented as a health resort on account of its climate and saline springs. Pop. (1939), 3800. B. will go down to hist. as the name of Hitler's mt. home or homes. Strictly there were 2 homes: one was a large chalet in the middle of a compound containing military barracks for some 20,000 troops; the other is the much more famous 'Eagle's Nest' or Berghof. The whole place was, in effect, one huge air-raid shelter and fortress, which looked as if it could have withstood the longest siege; but it was captured without a fight by troops of General Loclerc's Div. on May 5, 1945, during the closing days of the war. Hitler's chalet and those of Goebbels and Goering near by, were destroyed, together with the whole of the camp, in allied air bombardments shortly preceding the allied occupation of B. All that remained were the underground shelters packed with munitions, food, books, and champagne. It was here that Hitler received the majority of his guests;

but only intimate friends or heads of states whom he wished to impress were invited to this fantastic fortress on the mt. peak. Whole families lived in the barracks, which consisted of a series of apartments, and children's toys and school books were found among the debris. The famous 'Eagle's Nest,' however, survived the war undamaged. It is a mushroom-shaped solid stone house built squarely atop the 6000-ft. mt. dominating B., and was generally reached by an armoured-plated electric lift or, alternatively, along 5 miles of winding mt. roads. It is a fairy castle, matching the unreality of its owner's ideas, and belonging rather to the household stories of the brothers Grimm. It contains no bedrooms, but has a series of enormous salons all fitted with vast windows offering magnificent views over the valley below, with glimpses of the blue-green waters of the Königssee and the foaming Salzach R. Its site and solidity are in harmony with the majestic scenery of snow-capped mts. surrounding it. It consists of 13 floors, 12 of which are underground, built into the core of the mt. The top storey, built of blocks of mt. rock, looks from the valley like part of the mt. In fact it consists of a huge octagonal reception room, 30 yds. in diameter, with 5 huge windows. Its fireplace is large enough to take whole tree-trunks. The stone floor was carpeted with a superb Chinese carpet in chocolate and dusty pink, in the centre of which was a huge octagonal table, on which, after the Ger. debacle, troops of an Amer. airborne div. ate their rations. Over 36 arm-chairs, covered with flowers and moquettes in different patterns, were scattered about the room, together with a number of oval dark-oak coffee tables. The only other furniture found was a magnificent wireless set and electric gramophone. Leading from this salon is a rectangular banqueting hall, with a long narrow table and about 40 light-oak chairs covered with leather to match the tan and cream Persian carpet. A huge sideboard, nearly 20 ft. long, contained a white service of Limoges china, with orange dragon pattern. All the cutlery disappeared as souvenirs. The kitchen, too, is on a gigantic scale, with its huge electric stove of 4 ovens. Next to the kitchen is the servants' dining-room in turquoise blue enamel. Below this storey were the food cellars, guard room and servants' bedrooms, and underneath those, wine cellars. Outside the top storey ran a lofty porch 30 yds. long and 40 ft. high, looking sheer down the mt. side for thousands of feet. The 12 underground storeys were served only by lift.

Other buildings in this elaborate Nazi kingdom in miniature, Goering's residence, the office of the army staff, the ballroom, the restaurant and café, the children's nursery, the sun house, the stables and garages were all wrecked. They stood roofless with blackened walls in the midst of an area thickly sown with bomb craters. The Plattenhof, an up-to-date hotel, suffered little damage, and

was soon in use as a rest-house for Amer. parachute troops. The whole mt. was honeycombed with passages and defence rooms, and the 'Eagle's Nest' was protected by 5 rings of fortifications, built into the mt. itself, and camouflaged by green and brown paint and streamers. Entrance to the forts was only by tunnels 30 yds. long. Oil drums were placed on the roads so that a smoke screen could have been thrown round the whole mt. Slave labour was used for all this immense construction. The sordid wooden barracks in which the victims of Hitler's press-gangs lived and toiled for many months stood amid the pine-trees on the hillside in sharp contrast to the luxury of the surroundings created by their labour for the Nazi tyrants.

Berchtold, Leopold, Count (1758-1809), Ger. medical writer, travelled through Europe, Asia, and Africa with a view to mitigating human suffering; pub. works against hasty internment and concerning sicknesses incident to seamen. He pub. at Vienna, 1797, directions for the cure and prevention of the plague, and was active in making known the advantages of vaccination.

Berchtold, Leopold Antonius J. S., Count von (1867-1942), Austro-Hungarian minister and diplomatist, b. in Vienna of a family which ranked among the most anct. and wealthy of the Magyar nobility. Succeeded Count von Aehrenthal as ambas. to St. Petersburg, his sangfroid and powers of deception enabling him to weather the storm with Russia over Aehrenthal's annexation of Bosnia-Herzegovina in 1908. In 1912 he succeeded Aehrenthal as foreign minister, a post he accepted with reluctance and mainly out of loyalty to the emperor. At first he thought the dual monarchy's Balkan problems could be settled without war, but after the Balkan wars (1912-13) he became a convert to the belligerent solution long advocated by the chief of staff, Count von Hoetzendorf. The assassination of the Archduke Francis Ferdinand at Sarajevo gave his party in Vienna the opportunity they sought. There is no doubt from documentary evidence, especially that of Count von Lerchenfeld, that B. was a party to the conspiracy to hasten the ultimatum to Serbia in such circumstances that Serbia might not have time to offer satisfaction. He did everything in his power to induce Germany to threaten Russia, but when he appreciated that the Russian Gov. would not yield to threats, he instructed the Austrian minister in St. Petersburg to reopen negotiations. After Italy joined the Allies and Rumanian forces overran Bukovina his influence waned, and in Jan. 1915 he resigned his office. Was subsequently Oberstkämmerer to King Karl.

Berck, Theodor (1812-81), Ger. philologist, b. at Leipzig. Appointed prof. of classical literature at Marburg, 1842; later, at Freiburg. Lived many years in Bonn, where he devoted himself to Gk. literature, his chief works being *Poetæ Lyrici Græci*, pub. 1843 (latest ed. pub.

1900); *Griechische Literaturgeschichte*, 1872-87, both these works being completed by later Ger. writers. Also produced eds. of the *Fragments of Aristophanes*, 1840, and of Anacreon, 1834. His work is still recognised, and a lyric anthology by him was re-ed. by E. Diehl in 1923.

Berck-sur-Mer, seaport and bathing resort in the dept. of Pas-de-Calais, France, 22 m. S. of Boulogne. Pop. 16,000.

Bercy, former Fr. com. situated on the r. b. of the Seine; it has been joined to Paris since 1860, and is the chief depot for the wines, oil, vinegar, and wood for Paris; boat-building is carried on.

Berdiansk, seaport on the N. shore of the sea of Azov, Russia. There is a good harbour; grain, wool, and hides are exported, and agric. machinery is manufactured. Pop. (1939) 52,000.

Berdichev, tn. of the Ukraine, 116 m. S.W. of Kiev by rail. Pop. (1939) 66,000 (mainly Jewish). An important trade centre. Famous for its 4 ann. fairs for the sale of leather, corn, wine, etc. The Ger. invading forces broke through B. on July 2, 1941, and the Russians recaptured the tn. in 1944.

Berdoe, Edward (1836-1916), Eng. doctor and author, b. in London; educated at Regent's Park College and London Hospital Medical College; practised in Hackney from 1876. In 1880 he joined the National Anti-Vivisection Society; and he ed. its organ, the *Zoophilist*, 1898-1915. He wrote many medical works. His hobby was the study of Browning, and he wrote a number of studies and works of reference on the poet.

Berdyaev, Nicolai (1874-1948), Russian philosopher, b. at Kiev. Early a revolutionary agitator and student of Marx, he became a priest in 1900 and attacked the anti-religious attitude of the Russian intelligentsia. After the revolution of 1917 he was appointed by Lenin himself to the chair of philosophy, Moscow Univ., but was expelled in 1922 and settled in Berlin, where he founded the Russian Academy of Philosophy and Religion. Later he removed to Clamart, near Paris, where he remained till his death. Appointed to a lectureship at the Sorbonne, 1939. His first book, *Subjectivism and Individualism in Social Philosophy*, was pub. in 1901. He was at this time in strong sympathy with the revolutionary movement in Russia, and in 1907 he wrote an article in which he forecast the victory of the Bolsheviks in the revolutionary struggle. He was at issue with them, however, over the rights of human creativeness, and the freedom of the spirit to which he believed orthodox Marxism to be inimical. Therefore, although the revolution of Nov. 1917 was, in his view, 'inevitable and just,' the conflict between his social and his spiritual ideals drove him into exile, and he left Russia in 1922. He remained an idealist thinker, and his philosophy of personalism had considerable influence on European thought. In a book written just before the Second

World War, *Slavery and Freedom* (Eng. trans., 1944), he sought the way whereby man could free his creative personality from spiritual, economic, and political forms of bondage. He wrote as a Christian philosopher, and in *The Meaning of History* stated the Christian philosophy of hist. As a Christian apologist he sought to free religion from the objectivity and materialism into which it has fallen as a social force. Other works which have been trans. into Eng. include *Freedom and the Spirit* (1935); *The Destiny of Man* (1937); *Solitude and Society* (1938); *Spirit and Reality* (1939); *Slavery and Freedom* (1944); *The Russian Idea* (an interpretation of Russian thought as a whole) (1947); and *Towards a New Epoch* (1948). He also wrote a scholarly and judicial account of the development of Communism under the title *The Origin of Russian Communism* (1937).

Bere, see BARLEY.

Berea: (1) Suburb and park of Durban (Port Natal), Natal. The suburb is picturesquely situated and commands the harbour. (2) Magisterial dist. in Basutoland, E. of Maseru, and containing the mission station of Berea.

Berea College, non-sectarian co-educational institution, situated in Madison co., Kentucky, U.S.A. The college was founded in 1855 to promote the welfare of the 'mountain region of the South,' and it stands on a ridge of the S. Appalachians, 1075 ft. above sea level.

Bereans, almost extinct sect of Christians founded in Scotland in the eighteenth century by the Rev. John Barclay (1734-98), a native of Perthshire. They are so called after the people of Berea, of whom it is said in Acts xvii. 11 that 'they received the word with all readiness of mind.' The B. hold that the knowledge of the existence and character of God can be obtained from the Bible alone, not from nature or reason; that the Psalms of David refer to Christ alone; that assurance is of the essence of faith, and that lack of faith is an unpardonable sin. The rest of their doctrine is practically identical with that of the Calvinists.

Berengar I. (or **Berenger** or **Berengarius**), king of Italy, 888-924, son of Eberhard, duke of Friuli, and grandson of the Emperor Louis le Debonnaire. Elected to the throne in preference to Guido, duke of Spoleto, he maintained his position against all rivals until 923, when he was overthrown by Rudolf, king of Burgundy. The following year he was assassinated.

Berengar II., king of Italy, 950-961, grandson of Berengar I. In 952 the Emperor Otto I. compelled B. to become a feudal dependant of Germany. In 961 B. was dethroned by the emperor, and eventually d. in 966, in a Bavarian prison.

Berengaria, daughter of Sanchez VI., king of Navarre, and Blanche of Castile, and queen of Richard I., Cœur de Lion. She was married to Richard in Cyprus in 1191, when he was proceeding on a crusade. Accompanying him to Palestine, she remained at Acre until Sept. 1192, when she left in advance of the king,

and safely reached Sicily, and eventually Poitou in France. The king, less fortunate, was taken prisoner by the archduke of Austria. B. was reduced to dire straits after Richard's death in 1199, but received assistance from the Templars. She d. childless in 1230. She was famed for her beauty and wisdom.

'Berengaria', The liner, originally built for the Hamburg-America line and launched in 1912 as the *Imperator*. After the First World War it passed to the ownership of the Cunard SS. Co. It was at that time one of the fastest steamships afloat, and also one of the largest vessels to be fitted for liquid fuel. It was a turbine steamer with quadruple screws; gross tonnage, 52,226; 883 ft. long, 98 ft. broad, 57 ft. deep; speed, 26½ knots. The B. was a favourite with the transatlantic traveller by reason of its speed, comfort, and luxurious equipment. One of its fastest transatlantic journeys was from Cherbourg to Ambrose Light in 5 days, 13½ hours. The ship was retired from service in 1936 after the inclusion of the new Cunard-White Star liner, *Queen Mary*, in the company's service.

Berenger de la Tour (d. c. 1559), Fr. poet, b. at Aubenas. Studied law with the view of filling some post in the magistracy, but devoted himself mainly to poetry. His verse is characteristic for elegance and verve, if at times it shows a want of good taste. Pub. works include *Le Siècle d'or*, 1551; *Choréide ou Louange du bal aux dames*, 1556; *L'Amie des amies*—an imitation of Ariosto, 1558; *L'Amie rustique*, with other poems and epistles, 1558—this last a very rare and curious work.

Berenger (called **Berenger of Tours**) (998-1088), Fr. divine, b. in Tours, of a rich and distinguished family. After studying at Chartres under Fulbert, he returned to Tours in 1031, and was made teacher in the monastery of St. Martin. He continued to reside at Tours, though he was made archdeacon of Angers in 1040. B. agreed with the doctrine expressed by Scotus Erigena in the preceding century, and openly taught it. He denied transubstantiation, and saw nothing but a symbol in the sacrament of communion. He developed these views in a letter to Lanfranc, prior of Bec, and was condemned for them by the Councils of Vercelli in 1050, Tours in 1054, and Rome in 1059. He recanted, and burnt his documents expressing them, but later again went back to his heretical opinions. On being condemned by Rome, however, he repented, and finished his life as a rigorous ascetic.

Berenice, seaport of anct. Egypt, situated on the E. coast of the Red Sea. It stands at the head of a gulf, and its harbour has been almost blocked by a sand-bar. Among its important ruins is a temple. It was founded in 285 B.C. by Ptolemy II.

Berenice, a Macedonic form of *Phere-nice*, meaning Bringer of Victory. (1) One of the 4 wives of Ptolemæus I., the founder of the dynasty of the Lagidæ in Egypt, and the mother of Ptolemæus II.,

called Philadelphus. B. had a son, Magas, by a former husband, who was afterwards king of Cyrene. (2) Daughter of Ptolemæus Philadelphus by Arsinoë, the daughter of Lysimachus. She was the sister of Ptolemæus III., Euergetes, and was given in marriage, 252 B.C., by her father to Antiochus II., king of Syria, called Theus, God, who divorced his wife Laodice on the occasion. After the death of Philadelphus, Antiochus divorced B. and took back Laodice, who poisoned her husband and put B. to death, together with a son whom she had by Antiochus. To avenge his sister's death Ptolemæus III., Euergetes, invaded Syria, put to death Laodice, and overran the empire of the Seleucids. (3) Wife (c. 248 B.C.) of Ptolemæus III., Euergetes; but her parentage is doubtful, though some authorities say she was the daughter of Magas, king of Cyrene. This B. is said to have made a vow of her hair during her husband's wars in Asia. The hair was placed in the temple of Venus, from which it was stolen, but Conon of Samos declared that it had been taken up to the skies and placed among the 7 stars in the Lion's tail. Callimachus wrote a poem on the occasion, which is now only known from the beautiful trans. by Catullus, *De Coma Berenices*. B. was put to death by her son Ptolemæus IV., Philopator, and his infamous minister Sosibius. (4) Otherwise called Cleopatra, the only legitimate child of Ptolemæus VIII. (Soter II.); reigned 6 months, the last 19 days in them in concert with her husband, Alexander II., who, according to Appian and Porphyry, murdered her 19 days after the marriage, 81 B.C. The portraits of Alexander II. and B. appear sev. times on the great wall of sandstone which encloses the temple of Edfu, and the portrait of B. is always the same. (5) Daughter of Ptolemæus IX., Auletes, who began to reign in Egypt, 81 B.C., sister of Cleopatra. During the absence of her father in Rome, B. was made regent, which office she held from c. 58 to 55 B.C. Gabinius, about the close of 55 B.C., came to Egypt with an army and restored Auletes, who put his daughter to death. (6) Daughter of Herodes Agrippa I., grandson of Herod the Great. After the capture of Jerusalem she was taken to Rome, and was to have married Titus, son of the Emperor Vespasian, but on his father's death Titus unwillingly sent her away, as the match was not pleasing to the Rom. people. (Suetonius, *Titus*.)

Berenice's Hair, see COMA BERENICES.
Berenson, Bernhard, Amer. historian and art critic, b. June 26, 1865; educated Boston Lat. School and Harvard Univ. He became a foremost authority of It. painting and painters of the Renaissance, and in this connection his work on the Venetian painters was pub. in 1894, on the Florentine in 1896 and 1903, on the Central It. in 1897, and on the N. It. in 1907. Other works include: *Lorenzo Lotto, an Essay in Constructive Art Criticism*, 1895; *The Study and Criticism of Italian Art* (3 series), 1901, 1902, 1916; *Essays on the Study of Sienee Painting*,

1918; *Three Essays in Method*, 1927; *Studies in Mediæval Painting*, 1930; *The Italian Painters of the Renaissance*, 1932; *Italian Pictures of the Renaissance*, 1932.

Beresford, Lord Charles William de la Poer (1846-1919), Baron B. of Metemneh and Curraghmore, Brit. naval officer, son of the fourth Marquess of Waterford, b. in co. Waterford, Ireland. He was educated in private schools, and entered the navy as a cadet of the *Britannia* in 1859. He became lieutenant in 1868, captain in 1882, and rear-admiral in 1897. He was naval A.D.C. to the Prince of Wales (King Edward VII.) on his visit to India (1875-6), and to Queen Victoria (1896-97). He was in command of the *Condor* at the bombardment of Alexandria in 1882, when he distinguished himself for bravery; he served in the Nile Expedition under Lord Wolseley, 1884-1885; he was in command of the naval brigade at the battles of Abu Klea, Abu Kru, and Metemneh, and commanded an expedition up the Nile to rescue Sir Charles Wilson's column. He was elected M.P. for Waterford, 1874-80; Marylebone, 1885-89; York, 1897-1900; Woolwich, 1902. He was appointed a lord commissioner of the Admiralty, but resigned in 2 years on a question of the increase of the fleet. In 1898 he visited China as a representative of the Associated Brit. Chambers of Commerce. He was in command of the Mediterranean Fleet, 1905-07, and of the Channel Fleet, 1907-09. He retired in 1911, in which year he was created G.C.B. Represented Portsmouth in Parliament until raised to peerage in 1916. Died in Caithness, 1919, and buried in St. Paul's, the peerage becoming extinct. His entertaining autobiography, *Memories*, was pub. in 1914.

Beresford, James (1764-1840), Eng. author, b. at Upham, Hants; educated at Charterhouse and Oxford. In 1812 he became rector of Knebworth Beauchamp, Leicestershire. His chief work, *The Miseries of Human Life; or the Last Groans of Timothy Testy* (1806-7), was praised by Scott, and he also pub. translations and religious books.

Beresford, John (1738-1805), Irish statesman, b. in Dublin and graduated at Trinity College in 1757. He sat in Parliament, representing Waterford, from 1760 till his death. He was made privy councillor, 1768; first commissioner of revenue, 1780; privy councillor of England, 1786. B. was Pitt's chief adviser in his Irish policy. B. suggested the clauses in Orde's Bill, regarding the removal of the commercial restrictions of Ireland, but was successfully opposed by Grattan. Lord Fitzwilliam dismissed B. from office in 1795, on the ground that his influence in Ireland was displeasing to the Grattan party, and therefore a hindrance to the gov. Fitzwilliam was recalled on this account, and B. reinstated. B. was instrumental in bringing about the union of Ireland with England, and superintended the fiscal arrangements between the 2 countries. His second wife was Barbara Montgomery, one of the 'Graces'

of Sir Joshua Reynolds's picture in the Royal Academy.

Beresford, John Davys (1873-1947), Eng. novelist, b. Mar. 7, at Castor, near Peterborough, son of the Rev. J. J. Beresford, rector of Castor; educated at Oundle School. He went to London at the age of 18, and was articled to a firm of architects. He pub. his first novel in 1911—the earliest vol. of a trilogy—*The Early History of Jacob Stahl*, by which novel, indeed, he will be best remembered—and after that wrote some 40 novels, among which should be mentioned *A Candidate for Truth* (1912), and *The Invisible Event* (1915), the remaining two novels of his trilogy. Although his themes are varied, he estab. a reputation as a writer of the realist school deriving from Gissing. He also owed much to the influence of Samuel Butler. *Jacob Stahl* was warmly received by the more acute critics, though it was not the kind of novel to woo popular taste. In the same year came the short novel, *The Hampdenshire Wonder*, a study of a small boy endowed with the most precocious intellectual gifts, and a highly original story. But in his preoccupation with abnormal psychology, he tended to lose much of imaginative power and, except for *These Lynnekers* (1916), the story of an apostate from the religious conventions of his family, and *The Prisoners of Hartling* (1922), his novels began to decline noticeably in artistic interest. Among his later books were his second trilogy: *The Old People* (1931), *The Middle Generation* (1932), and *The Young People* (1933). Besides novels he pub. sev. vols. of short stories, also a study of H. G. Wells (1915), *The Case for Faith Healing* (1934), and *What I Believe* (1938). He collaborated in 2 plays and wrote a third, *The Complicated Angler*.

Beresford, Lord John George de la Poer (1773-1862), primate of all Ireland; bishop of Cork and Ross, 1805; archbishop of Dublin, 1820; archbishop of Armagh and primate of all Ireland, 1822. In 1851 he was elected chancellor of the Dublin Univ., having been vice-chancellor since 1829. The cathedral of Armagh was restored through his liberality.

Beresford, William Carr, Viscount (1768-1854), Brit. general, the illegitimate son of the first marquess of Waterford. He entered the army in 1785 and served with distinction at Toulon, in Egypt, the Cape, and Buenos Aires. In Feb. 1809 he undertook the reorganisation of the Portuguese army and achieved great success. He was rewarded by being created a K.B. and a peer of Portugal. At Albuera he was in command, and he was also present at Badajoz, Salamanca, and other Peninsular battles. In 1814 he was made Baron, and in 1823 Viscount, B. He left Portugal in 1819, entered into Eng. politics, and became master-general of ordnance in Wellington's administration, 1828-30.

Beresina, or Berezina, riv. in Byelorussia, trib. of the Dnieper, which it joins after a course of 350 m. It waters the region of Minsk. Severe floods mar its navigable value, but it is serviceable as a

water conveyance for large rafts of timber to the open sea. It is memorable historically for the disastrous passage of Napoleon's troops in their retreat from Moscow in 1812. In the First World War Ludendorff and Hoffmann planned to drive the Russian armies against the Pripiet and Beresina marshes, and roll up the whole Russian front from the rear, but never had sufficient troops to carry out such enormous operations. In the Second World War the Gers. were successful in defeating large Russian forces on the B., following the Russian defeat at Bialystock (1941).

Beresna, or Berezna, tn. of Ukraine, situated 30 m. E. of Tchernigov, on a trib. of the Desna. Pop. 11,000.

Beretini, see CORTONA, P. DA.
Berezniki, tn. in the Ural Mts., Sverdlovsk region of the R.S.F.S.R. It was founded during the first and second Soviet 5-year plans, and has the largest chemical combine in the U.S.S.R. Pop. 63,500.

Berezov, tn. of W. Siberia, situated on the Ob in the Ostyak-Vogul natural region. From time to time fires have destroyed the tn. Its trade is in furs, mammoth bones, and fish. Pop. 1000.

Berg, Duchy of, former duchy of Germany, situated on the r. b. of the Rhine, and having for its boundaries Cleves on the N., La Marck on the E., Westphalia on the S., and Cologne on the W. It became a duchy in 1380, when it was in the hands of the Jülich family. The Thirty Years war was partly brought about by the question of its successor on the death of John William in 1609. In 1815 the Congress of Vienna made it over to Prussia, though formerly it had been in the possession of Louis, son of the king of Naples.

Berg, suburb of Stuttgart, cap. of Württemberg, Germany, on the Neckar. Before the Second World War had iron and woollen manufs. Has mineral springs.

Berg, Alban (1885-1935), Austrian composer; b. in Vienna. Won recognition with his opera *Wozzeck*, which vindicates the new atonal methods of composition of his teacher, Schönberg, to a greater degree than any of the latter's own compositions. B.'s first pub. work was the piano sonata in B minor (1908). He developed his atonal style in *Four Songs* (1908), a string quartet (1910), and *Three Orchestral Pieces*, Op. 6 (1914). *Wozzeck* was written during 1914-20 and first produced at the Berlin State Opera in 1925. His later works include a psychological opera, *Lulu*. Other works include the *Lyric Suite* for string quartet, played in London in 1932, and *Chamber Concerto* for violin, piano, and thirteen wind instruments, 1927.

Berga, tn. of Catalonia, Spain, 52 m. N.N.W. of Barcelona. Pop. 6000.

Bergaigne, Abel (1838-88), Fr. philologist, b. at Vimy, Pas-de-Calais. He became prof. of Sanskrit at the Sorbonne. The following of his works may be mentioned: *La Religion védique*, 3 vols., Paris, 1878-83; *Chronologie de l'ancien royaume Khmér*, 1884; and *Études sur le*

lexique du Rig-Veda, 1885. See V. Henry, *L'Œuvre d'Abel Bergaigne*.

Bergama (anct. Pergamus), city of Asia Minor about 40 m. N. of Smyrna. Beautifully situated in a fertile valley. Pop. 15,000.

Bergamo, city and episcopal see of Lombardy, Italy. It is the cap. of the prov. of the same name, and is situated at the base of the Alps at the junction of the Brembo and Serio. There are 2 distinct parts to the tn., the old, Città Alta, on a hill, and Città Bassa below.

rainfall (mean 74 in. annually). The appearance of the tn. is picturesque, amid the beauty of the surrounding scenery. The chief street of the tn. is named Strandgaden. Its prin. buildings are the cathedral, hospital, diocesan college, observatory, and biological station. Mariakirken, an old stone-built church, dates from the late twelfth century. The Norwegian School of Economics and Social Sciences is situated in B., and in 1946 Norway's second univ. was formally opened here. From the Middle Ages B.



Norwegian State Railways

BERGEN

There are silk and cotton factories and a cattle market. Pop. (prov.), 585,000; (tn.), 85,000.

Bergamot (*Citrus bergamia*), variety of *C. aurantium*, the orange (q.v.). Essence of B. is an essential oil obtained both by pressure and distillation from the rind of the ripe fruit of the B. The essence smells of oranges, and is used as a perfume.

Bergara, or **Vergara**, tn. in the prov. of Guipúzcoa, Spain. It is noted for cotton and linen stuffs. Pop. 9000.

Bergedorf, tn. in the ter. of Hamburg, on the R. Bille, 10 m. from Hamburg. The dist., known as *die Vierlände*, is fertile, and became a centre of market gardens for Hamburg and export. Pop. (dist.) 34,000, (tn.) 19,000.

Bergen, city and seaport of Norway, and the second largest tn. of that country, situated on the W. coast, in lat. 60° 23' N. It lies between Vaagen Harbour and the Fuddefjord. The vegetation is unusually prolific for that particular lat., though it is accounted for by the equally unusual

has been an important centre of culture, and as far back as 1600 painting and sculpture were of a high standard, as were also various crafts, especially that of the goldsmiths. There are sev. well endowed museums, such as the Bergen Museum, the Museum of Arts and Crafts, and the Hanseatic Museum. B. is the second largest shipping centre of Norway, and its trade ranks next to that of Oslo. The prin. export is fish and fish products, while the others include butter, copper ore, and hides. Its manufs. include paper, pottery, and ropes. 'Bryggens', the Quay, which is a small tn. in itself, dating from the early Middle Ages, is in a very good state of preservation. At Nordnes and Sandviken can be obtained glimpses of the tn. of the rococo and empire periods, which are in striking contrast with the modern centre of the tn. with its wide streets and fine parks. Floien, 1050 ft. above sea level, may be reached from B. by the funicular railway. About 9 centuries ago King Olav Kyrre gave municipal privileges to B., and for the

next 200 years B. was not only a leading commercial tn., but also a political centre and a royal bor. From the mid fourteenth century the Hanseatic merchants estab. themselves in the tn. and played an important part in the development of its commerce. Fire damaged it at different times, and the broad spaces (Almenninge) now met so frequently are arranged to meet any possible outbreak. B. was one of the first places to be occupied by the Gers. after their invasion of Norway in Apr. 1940, and the tn. and harbour were raided during the same month by the R.A.F. Haakonshalle, the twelfth-century guildhall, and Rosenkrantz Tower, built in the sixteenth century, were both severely damaged in the war. Pop. (including the adjoining dists.) about 130,000.

Bergen (Belgium), *see* MONS.

Bergen-op-Zoom, tn. of the Netherlands, in the prov. of N. Brabant, at the junction of the E. Scheldt and the Zoom. It has large tile and pottery works, and the oyster and anchovy fishery is important. Sugar beet is a new industry. In the fifteenth century its cloth trade and fisheries made it an important tn. Fortified in 1576, it was unsuccessfully besieged by the Spaniards in 1588, 1605, and 1622. It was more strongly fortified by Coehorn, and was captured by the Fr. in 1745, and again in 1795. Sir Thomas Graham (Lord Lynedoch) failed in the assault on the tn., 1814. The fortifications were destroyed in the nineteenth century. Pop. 24,000.

Bergerac, tn. on the Dordogne, France, in the dept. of that name, trades in wine, truffles, brandy; there are spinning mills, flour and paper mills. It was one of the strong places of Protestantism in France, was taken by Louis XIII. in 1621, and the revocation of the Edict of Nantes did much to check its prosperity. Pop. 17,000.

Bergerac, Savinien Cyrano de (1619-55), Fr. author of romances and dramas, son of the Seigneur de Mauvières et de B., served as an officer in the Guards during 1639 and 1640; his enormous nose, his adventures, including a fight with a hundred opponents, and the duels which persisted throughout his life, are recorded by his friend Lebreton; he then turned to writing, producing (1654) *Le Pédant joué*, a comedy which influenced Molière, and the tragedy, *Mort d'Agrippine*, which the orthodox suspected of atheism. His satirical scientific romances, *Histoires comiques des états de la lune* (1654) et du soleil (pub. posthumously) have been regarded as the forerunners of Swift's *Gulliver's Travels*, or as an echo of Rabelais's *Pantagruel*. He d. from an accident while in the service of the duc d'Apurjon. Edmond Rostand founded his play, *Cyrano de Bergerac*, 1897, on the adventures of the real Cyrano. The collected works were pub. by P. L. Jacob, 1858, with Lebreton's memoirs.

Bergh, Johan Edvard (1828-80), Swedish painter, b. in Stockholm. His paintings are chiefly landscape, and are idealistic in character. He preferred

vivid, lively colouring. In 1861 he was appointed prof. in the Academy of Stockholm. His best picture is perhaps his 'View of Uri,' which went to the Berlin Academy.

Berghaus, Heinrich Carl Wilhelm (1797-1884), Ger. geographer, b. at Cleves. In addition to many valuable geographical works, e.g. *Grundriss der Geographie*, 1842, his chief work is the great *Physikalischer Atlas*, 1838-48, new ed. 1886, by his nephew Hermann (1828-90).

Berghem, Nicholas, *see* BERCHEM.

Bergisch-Gladbach, *see* GLADBACH.

Bergk, Wilhelm Theodor (1812-81), Ger. classical scholar, b. at Leipzig; prof. of classical literature at Marburg, Freiburg, and Halle from 1842 to 1868, when he retired to Bonn. His chief works are his ed. of the Gk. lyric poets (*Poetæ Lyrici Græci*, 1843), of Anacreon, 1834, and a lyrical anthology. His *History of Greek Literature*, begun in 1872, was completed by G. Heinrichs and E. Peppmüller. *See* Peppmüller's memoir in ed. of his minor writings, 1884.

Bergler, Joseph (1753-1829), Ger. painter, b. at Salzburg; sent to Italy, 1776, and studied in oil and fresco with Knoller, Mengs, Canova; obtained the prize at the Academy of Parma, 1784, with a picture of Samson delivered to the Philistines by Dallah. Returned to Germany, 1786, and painted many altar-pieces for churches in the neighbourhood of Passau.

Bergman, Torbern Olof (1735-84), Swedish chemist, b. at Katrineberg, in W. Gothland. In 1767 he was appointed prof. of chemistry at Upsala. Notable for researches in dyes and on tungsten. His writings have been collected in 6 octavo vols. *Opuscula Torberni Bergmani Physica et Chemica*.

Bergmann, Ernst von (1836-1907), Ger. surgeon, b. at Rügen, Livonia, Russia. In 1866 he was attached to Prussian troops in the hospital service through the Bohemian campaign and the Franco-Prussian war, and was appointed prof. of surgery at Dorpat, 1871-78. From 1878 to 1882 he was prof. at Würzburg, and then occupied the chair of surgery in the univ. of Berlin. In 1887 he attended the crown prince of Germany, afterwards Emperor Frederick III., who was attacked with cancer of the throat; this case gave rise to a controversy due to the different diagnosis of his colleague in attendance, the Eng. specialist, Sir Morell Mackenzie. B. wrote numerous treatises, including *Die Lehre von der Fettleibigkeit*, 1863; *Die Lehre von den Kopfverletzungen*, 1880; and *Die chirurgische Behandlung von Hirnkrankheiten*, 1898.

Bergmehl, or Mountain Flour, geological deposit in the form of very fine greyish-white powder, also called kieselguhr, fossil farina, and diatomaceous or infusorial earth. It is largely composed of the indestructible siliceous frustules or cell-walls of diatoms. Beds of earth of considerable thickness that have accumulated in past geological ages are now being found on the bottom of some freshwater lakes and on the sea

floor. B. has valuable abrasive properties. It is employed in manufacturing dynamite as an absorbent; and is used as insulating material for boilers and steam-pipe coverings.

Bergner, Elisabeth (b. 1898), Ger. actress who made her reputation, in England, on her first appearance. This was in Margaret Kennedy's *Escape Me Never* at the Apollo Theatre, 1933-34. Previously she had won early fame in Germany in the leading role in *La Dame aux camélias*, and also in a Ger. rendering of Margaret Kennedy's *The Constant Nymph* and Shaw's *St. Joan*. Played Rosalind at Stratford-on-Avon Shakespeare performances. Also known for film work, notably in *Die Träumenden Münde*, *Catherine the Great*, and *Escape Me Never*. In 1935-36 Sir J. M. Barrie wrote the play *David* especially for E. B.

Bergschrund, mountaineering term for a crevasse at the base of a snow or ice slope. Bs. are usually too wide to be strided, and resort must be had to a snow bridge.

Bergson, Henri Louis (1859-1941), Fr. philosopher, b. in Paris, Oct. 18. His father was a musician of Jewish birth; his mother was Brit. Although he spoke Eng. fluently, his education was entirely Fr. at the Lycée Condorcet and the École Normale. He held the post of prof. of philosophy at the Lycée d'Angers, 1881-1883, and after a number of similar appointments in the provs., he became prof. at the École Normale Supérieure, 1897-1900. In 1900 he was elected to a professorship at the Collège de France, holding the chair of philosophy there until 1921. In 1914 he was elected to the Académie Française, and in 1927 was awarded the Nobel prize for literature. His thesis, *Essai sur les données immédiates de la conscience*, was delivered to the univ. of Paris in 1889, and won him immediate recognition. He was perhaps the first philosopher to recognise sufficiently the importance of change. His view was that much of the confusion in early metaphysics arose from the attempt to state reality in terms of *space* and to eliminate *time*. This attempted elimination of time is, he asserted, characteristic only of knowledge dominated entirely by conceptions of utility; and if the relation between knowledge and its objects is stated in terms of time instead of space, many antinomies, e.g. those of Idealism and Realism, will be resolved. Throughout his work and particularly in *Creative Evolution*, B. insisted on the distinction between the nature of experience of time and that of experience of space: that time, properly understood, and freed from certain spatialising notions that have become entangled with it through the infirmities of thought, is a process of change in which none of the parts is external to another, but all are interpenetrating; where the past is carried on into the present; where therefore there is no repetition, but a continual creation of what is new—whereas space is that whose parts are external to one another and can be simultaneously apprehended, and in which recurrence of the same thing in the same position is

possible. Like Heraclitus, B. regards everything as in a state of flux; ceaseless change in which there is, strictly speaking, no repetition or recurrence. There being no recurrence, there cannot well be any guiding rules of conduct to meet each new and unique contingency. His original aim, like that of many other philosophers, was to relieve himself of the oppressive chain of cause and effect, to assert free will as against mechanistic determinism. This he was able to do as a result of his meditations on time—reaching the conclusion that, despite the apparent progress of successfully predictive science, the future remains, not only unpredicted, but essentially unpredictable, because essentially uncertain. For B. there is a continual drama, of Life or Consciousness struggling against Matter and not conforming to its laws. At first, B. was purely dualistic on this question; but it was noticed that in *Creative Evolution* he conceded something to the monistic tendency, and regarded matter as 'a vital impulse arrested.' This principle of the *élan vital* in evolution, the urge to create, was put forward by B. as an alternative to the Darwinian theory of natural selection, which, in his view, did not sufficiently explain the evolution of intellect. His theories had a profound influence on biological studies, and were corroborated by later developments in the study of psychology. His chief publications are *Essai sur les données immédiates de la conscience*, 1889 (Eng. translation, *Time and Free Will*, 1910); *Matière et mémoire*, 1896 (Eng. translation, 1911); *Le Rire*, 1900 (Eng. translation, 1911); *L'Évolution créatrice*, 1907 (Eng. translation, 1911); *L'Énergie spirituelle*, 1919; *Durée et simultanéité*, 1923; *Les Deux Sources de la Morale et de la religion*, 1932 (Eng. translation, 1935). See W. James, *A Pluralistic Universe*, 1909; A. D. Lindsay, *The Philosophy of Bergson*, 1911; H. Wildon Carr, *Henri Bergson: the Philosophy of Change*, 1912; E. Hermann, *Eucken and Bergson*, 1912; Hugh S. Elliot, *Modern Science and the Illusions of Professor Bergson*, 1912; an article by A. J. Balfour in *Hibbert Journal*, 1911; and a critical exposition by J. Chevalier, 1928.

Bergues, tn. of N. France, in the Nord dept., 5 m. S.S.E. of Dunkirk. Pop. 3800.

Berg Wind, name applied in the S. coast of Cape prov. to a rough, hot, dry northerly wind. This wind is frequent during the months of May and Aug. Its duration is normally one day, but occasionally it blows steadily for 2 days.

Bergylt, or **Berguylt** (Norwegian *berg-gylla*), European name for the rose-fish, or *Sebastes marinus*, a fish of the family Scorpenidae (with 15 dorsal spines and 31 vertebrae). It is found on both shores of the N. Atlantic, and is known by many names, amongst them being Norwegian haddock, red-fish, hemdurgan, red-perch, red-snapper. The grown fish is of a nearly uniform orange-red colour. The same name is used in Scotland for the black goby.

Berhampur: (1) Tn., Murshidabad dist.,

Bengal, India, near Murshidabad on the Bhagirathi. The Indian mutiny broke out here. The old and abandoned tn. of Cossimbazar is within the boundaries. Pop. 32,000. (2) Tn., Ganjam dist., Madras, India. The chief industries are silk-weaving and sugar-manuf. Pop. 25,000.

Beri-beri, tropical disease, of which the main symptoms are those of peripheral neuritis, beginning with numbness and stiffness in the legs, swellings and puffing of the ankles and face, and paralysis of muscles; in 'wet B.' the puffiness becomes general and dropsical, in 'dry B.' the muscles atrophy, acute breathlessness and heart palpitations follow, with heart failure, collapse, and death, or the dropsical condition affects the lungs with fatal effects. The symptoms vary in intensity according to the particular nerves involved in the inflammation. Mortality varies greatly. The disease was found mainly among the rice-eating peoples of the E. It has also occurred in Europe, the U.S.A., and other parts of the world, not therefore being confined to the tropics. The relationship between the prevalence of the disease and a diet consisting mainly of white flour or milled rice or tapioca came gradually to be realised towards the end of the last century. Eijkman, a medical officer of a prison in Java, was the first to make scientific observations of the effect of a diet of white rice, first on birds, and later on the inmates of the prison. The result of these experiments were confirmed by the work of Fraser and Stanton in the Malay States who proved that the cause of the disease was the absence from the diet of a chemical substance found in the whole rice grain and the whole wheat germ. It was not until 1927 that efforts to isolate this anti-beri-beri substance were successful, and the substance thus obtained was analysed by Jansen and Donath working in the Netherlands E. Indies. This substance was later identified with the vitamin B, the discovery of which was made independently by scientists working in the United Kingdom following the lead given by the work of Sir Gowland Hopkins (q.v.). See VITAMINS.

See H. V. Dangerfield, *Beri-Beri*, 1905; W. Hunter and W. V. M. Koch, *Etiology of Beri-Beri*, 1906; E. Ward, *Beri-Beri, its Etiology*, 1915; H. Fraser and Sir A. T. Stanton, *Collected Papers on Beri-Beri*, 1924.

Bering, Vitus (d. 1741), Dan. explorer; entered the navy of Peter the Great, and made sev. attempts to settle the question of the junction of Asia and America; discovered the is. and strait that now bear his name.

Bering Island is situated in the S.W. of B. Sea. It is the most westerly is. of the Aleutian group, desolate and uninhabited. Bering was wrecked here, and, without food or shelter, *d. miserably* in 1741.

Bering Sea and Strait, the latter divides the continents of America and Asia, and also joins the N. Pacific with the Arctic Ocean. It is about 38 m. wide at its

narrowest part, but is wider at the N. and S. extremities. There are numerous bays on either side of the strait, of which the waters are frozen over for sev. months in the year. B. Sea, which is sometimes called the sea of Kamchatka, is a part of the N. Pacific Ocean, and is situated between B. Strait and the Aleutian Is. It is the haunt of the whale, walrus, and fur seal.

Bering Sea Question, international dispute, between the govs. of the U.S.A., Great Britain, and Canada, connected with the unlicensed fishing of Canadian sealers in the Bering Sea. In 1886 certain Canadian sealers started on a business basis the hunting and killing of seals beyond the 3-mile limit in the Bering Sea, in which Great Britain has commercial privileges, granted by Russia in 1825. The Gov. of the U.S.A. took steps to prevent Canadian fishing, and in 1892, by the Blaine-Pauncetote treaty, it was agreed that a court of arbitration should be held in Paris to settle the question at issue. This court decided *inter alia* that the U.S.A. Gov. had no right of protection of property in seals beyond the 3-mile limit, and no exclusive rights of jurisdiction in the Bering Sea. The U.S.A. also paid a sum of \$92,700 to the Canadian Gov. as a compensation for the ships she had unlawfully seized or damaged. Consult Stanton, *The Bering Sea Controversy*, 1892; Report of the *Bering Sea Commission*, 1893.

Bériot, Charles Auguste de (1802-70), Belgian violinist and composer, *b. at Louvain*; he married Malibran, the famous singer, in 1836; prof. in the conservatory of music of Paris, 1843; and of Brussels, 1843-52. He wrote a manual for the violin, composed 7 concertos and numerous other pieces. He had 2 noted pupils, Vieuxtemps and Léonard.

Beris, genus of dipterous insects of the family Xylophagidae. The species are small, metallic-coloured flies which frequent the leaves of plants, and the larvae feed on putrescent wood. *B. clavipes* lays its eggs in the form of a little chain of single oval eggs glued together.

Berislav, or Borislav, tn. in the region of Kherson, Ukraine, 40 m. E.N.E. of Kherson city. It manufs. candles, and exports corn and timber, and there are oil deposits in the B. dist.

Berja, tn., Almería, Spain, near Adra. Lead is mined near; agric. products include wine, oil, and esparto grass, and there are paper and small cotton mills. Pop. 13,500.

Berkeley, tn., Gloucestershire, England; situated in the Vale of B., a rich dairy and pasture country, celebrated for its 'double Gloucester' cheese. The B. Ship Canal admits small vessels to Gloucester from the docks at Sharpness. The church is Early Eng. and Decorated. B. Castle, where Edward II. was murdered, to the S.E., the residence of Lord Fitzhardinge (see BERKELEY, family), is one of the finest in England. Dr. Edward Jenner, the discoverer of vaccination, was *b.* and buried here. Cloth was once manufactured. It was a bor. in the thirteenth

century, but the corporation was dissolved in 1885. Pop. 800.

Berkeley, tn., Alameda co., California, U.S.A. It is a popular residential dist. for San Francisco, 7 m. distant across San Francisco Bay. It is the site of the univ. of California, estab. 1873, and of numerous denominational theological colleges and seminaries. Pop. 85,500.

Berkeley, name of an Eng. noble family, whose hist. centres round the tenure of the great castle at Berkeley, Gloucestershire. A clear descent can be traced to Robert Fitz-Harding, who *d.* in 1170, and was a wealthy citizen of Bristol. Tradition traces his descent from a son of a king of Denmark who came over with the Conqueror. In 1155 he obtained a grant from the king of the manor of B., and a marriage took place between his son Maurice and the older family, descended from the Domesday tenant. Various lords of B., usually named Thomas or Maurice, played a distinguished part in the military and political annals of the kingdom. On the death of the ninth earl of B. in 1810, an important and interesting lawsuit took place. In 1796 he had married Mary Cole, by whom he had already sev. children; to legitimise these children he made a declaration of an earlier marriage; this entry of marriage in a par. register was declared by the House of Lords to have been a forgery. The eldest son, thus declared illegitimate, had been left the castle and estates by will, and now claimed a writ of summons as a baron, 'by tenure of the castle of B.,' a claim which was defeated, as it had been declared in 1669 that such baronies by tenure were not to be revived. He was, however, raised to the peerage as Earl Fitz-Harding; his brother succeeding him revived the claim and was made a baron with the title of Fitzhardinge, which still remains, together with the ownership of the castle and B. estates. The earldom of B. remains in the legitimate branch of the family. There have been many branches of the family, such as the Lords B. of Stratton (1658-1773), with which the philosopher George B. (q.v.) was connected.

Berkeley, George (1685-1753), Irish philosopher and bishop, *b.* near Dysert, near Kilkenny, Ireland; the son of a relative of Lord Berkeley of Stratton, Irish viceroy, 1670-72; his mother belonged to the same family as General Wolfe. He entered Trinity College, Dublin, 1700, of which he became fellow, 1707. Here he studied Descartes and Newton, while Locke's *Essay*, pub. 1690, was already influencing the study of philosophy. The early trend of his mind is shown by his valuable *Commonplace Book*, 1705-6, first pub. in 1871, which gives the first working out of his new principle in philosophy, that matter, substance, and cause have no meaning apart from the conscious spirit. In 1709 he pub. *A New Theory of Vision*, followed by a fuller statement, 1710, *Principles of Human Knowledge*. In 1711 appeared a *Discourse on Passive Obedience*, and in 1713 Swift introduced him to the court

and the intellectual society of London, and a popular exposition of his new theories in the form of *Dialogues between Hylas and Philonous* was pub. From 1714 to 1720 he travelled in Europe as chaplain to Lord Peterborough and as tutor to the son of Bishop Ashe. On his return, the disastrous condition of society, due to the collapse of the South Sea Bubble, led to his *Essay towards Preventing the Ruin of Great Britain*, 1721. In 1722 he was made dean of Dromore, and in 1724 dean of Derry. He then embarked on a scheme for the founding of a college in the Bermudas, to christianise from there the Amer. continent. Through Walpole he obtained a promised grant of £20,000, and in 1728 he went to Rhode Is., where he lived till 1731, returning when he realised the money promised would not be paid. In 1733 he pub. *Alciphron, or the Minute Philosopher*, a Platonic dialogue on the philosophy of religion, with criticism of the free-thinking of the age. He was made bishop of Cloyne, 1734. He pub. *The Analyst*, 1734, and *The Querist*, 1735-37, the last a series of questions on sociology and economics. In 1744 was pub. his last work, *Siris*, which nominally dealing with the use of tar-water as a specific in small-pox and other diseases, contains some of his most profound metaphysical speculations. In 1752 he resigned his bishopric and moved to Oxford, where he *d.*

B. is the direct successor to Locke, and much of his work consists of attempts to solve the problems that Locke had failed to solve. The central principle of B.'s philosophy, that the essence of all reality is its being perceived, or in other words, the impossibility of anything existing independently of perception, was suggested to B.'s mind by an early study of Locke. As for Kant, he himself has left it on record that he was awakened from his 'dogmatic slumber' by Hume's trenchant but not altogether accurate attack on B. B.'s *New Theory of Vision*, *Principles of Human Knowledge*, and the *Dialogues between Hylas and Philonous* (Everyman's Library, 483), although written before he was 30, contain, nevertheless, the main exposition of his philosophy. This main principle was that nothing existed apart from perception, a principle which B. declared to be intuitively obvious and manifest common sense. But the *soi-disant* men of common sense among his contemporaries—including Dr. Johnson—persisted in regarding B.'s doctrine, at best, as a subtle metaphysical paradox, at worst, as an ingenious sophistry. He was charged with attempting to prove the non-existence of matter, and that everything in the universe was merely ideal. B. protested against this assumption, asserting that everything that is seen, felt, heard, or in any way perceived, is a real being, i.e. exists, whilst, on the contrary, a thing which is not perceived cannot be known, and, not being known, cannot exist. The only intelligible cause of all phenomena is a mind. Neither pain nor

pleasure exist apart from their being felt. Standard ed. of B.'s complete works, A. Campbell Fraser, 1871, new and revised ed., 1901, with life, letters, etc.; also *Selections*, 1899, and *Berkeley in Blackwood's Philosophical Classics*; see also G. Sampson's ed. of *Works*, 1899, with biography by A. J. Balfour; J. M. Hone and M. M. Rossi, *Bishop Berkeley*, 1931.

Berkeley, Lennax Randal Francis (b. 1903), Eng. composer, partly of Fr. origin. Educated at Oxford Univ. Studied music in Paris. Has written piano music, orchestral and chamber music, and an oratorio, *Jonah* (1936).

Berkeley, Miles Joseph (1803-89), Eng. botanist, b. at Biggin Hall, Northamptonshire; educated at Rugby and Cambridge. In 1886 he became rector of Sibbertoft. He was one of the earliest investigators on the potato murrain, on grape mildew, and on diseases of other vegetables. His chief works are *Introduction to Cryptogamic Botany*, 1857, and *Outlines of British Fungology*, 1860.

Berkeley Sound, opening on the N.E. coast of E. Falkland Is.

Berkhamstead (Great Berkhamstead), tn. of Hertfordshire, England, 28 m. distant by rail from London. It is on the Bulborne R., and near the Grand Junction Canal. Straw-plaiting is the chief industry. The grammar school dates from 1541, and there is a large church, St. Peter's, of many styles and dates, chiefly Perpendicular. There are remains of the once important castle. Pop. 8000.

Berkovitz, tn. of Bulgaria, on the Ogost, a trib. of the Danube. It lies 40 m. N.W. of Sofia. Pop. 6000.

Berkshire (A.-S. *Berroc-scir*, from the 'wood of Berroc where the box-tree grows'), co. of England, in the S. midlands, lying between Oxford and Bucks, N.; Hampshire, S.; Surrey, E.; and Wiltshire, W. The area is 462,367 ac. Pop. 311,000. There are 3 co. parl. divs., Abingdon (N. div.), Newbury (S.), and Windsor (E.). Reading, the co. tn., returns 1 bor. member. The Thames forms the natural N. boundary, on which are situated the old tns. of Abingdon, Wallingford, Maidenhead, Reading, and Windsor. In the N.W. is the Vale of the White Horse, so called from the rude figure of a horse, 374 ft. long, cut out of the chalk on White Horse Hill (856 ft.). It is probably of far greater antiquity than Alfred's Dan. victory it is said to commemorate. Through the rich pastoral vale on which lies Wantage runs the Ock. S. and E. are the valleys of the Pang, meeting the Thames at Pangbourne (near is Bradfield College, founded 1850), and of the Lambourn, draining to the Kennet, a beautiful trout-fishing stream, which runs to the Thames at Reading; on its S.W. reaches lie Hungerford and Newbury. Near is Inkpen Beacon (1011 ft.), the highest point in the co. Windsor Forest, the castle, and the tn. are on the E. border, and S.E., stretching into Surrey, are the sandy pine-clad heaths of Bagshot, where are Ascot and Wokingham, near which are the Royal Military

College at Sandhurst and Wellington College. The co., except for Reading, is chiefly agric., sheep-farming on the chalk Berkshire downs and dairying being of great importance. The B. breed of pigs is famous. See F. A. Brabant, *Berkshire*, 1911; H. W. Monckton, *Berkshire*, 1911; Arthur Mee, *Berkshire*, 1939.

Berkshire Hills, name given to the mt. dist. of Berkshire co., Massachusetts, U.S.A. The scenery and healthy situation attract thousands of visitors annually; the mts. are a continuation of the Green Mts. of Vermont. The highest point is Greylock (3535 ft.).

Berkshire Regiment, The Royal 1st Battalion (formerly 49th Foot), formed in 1714 in W. Indies from independent companies which were regimented in 1744; fought in the Amer. war of 1777; in 1782 became the Hertfordshire Regt. As marines it served in Baltic fleet in 1801. Took part in the Amer. war of 1812-14, China war of 1841-42, and Crimean war. In 1881 became the Berkshire Regt., title Royal being granted in 1885. 2nd Battalion (formerly 68th Foot) raised 1755; served under Wellington in the Peninsula. Garrisoned St. Helena during Napoleon's captivity. In 1881 was linked with the 49th to form the Berkshire Regt. During First World War raised 16 battalions for service in France, Flanders, Italy, and Macedonia. In the Second World War the B. R. fought in France and Belgium and in Burma. They were part of the 168th Brigade of the 56th (London) Div., and fought in the last stage of the Tunisian campaign, and as part of the allied landing force in Salerno Bay on Sept. 9, 1943. The next month they crossed the Volturno and Garigliano, being engaged in battles fought over very difficult terrain. Afterwards their div. was moved to the Anzio 'beach-head' (Jan.-Feb. 1944), and in Aug. of that year were again moved over to attack the defences of the Adriatic coast, and thereafter took part in the thrust in Apr. 1945 to the line of the Po. Another unit rendered conspicuous service at Mandalay in 1945.

Berlad, cap. tn. of Tutova, Rumania, on the railway from Jassy to Galatz. Pop. 25,000. Noted for its ann. horse fair; manufs. soap and candles.

Berlichingen, Götz von (sixteenth century), Ger. knight of Swabia, the subject of Goethe's poem bearing his name (trans. by Sir Walter Scott). Went to war with his neighbours, and in 1513 was put under the ban of the empire for attacking Nuremberg; besieged by Maximilian the Emperor, and d. in defence of his castle.

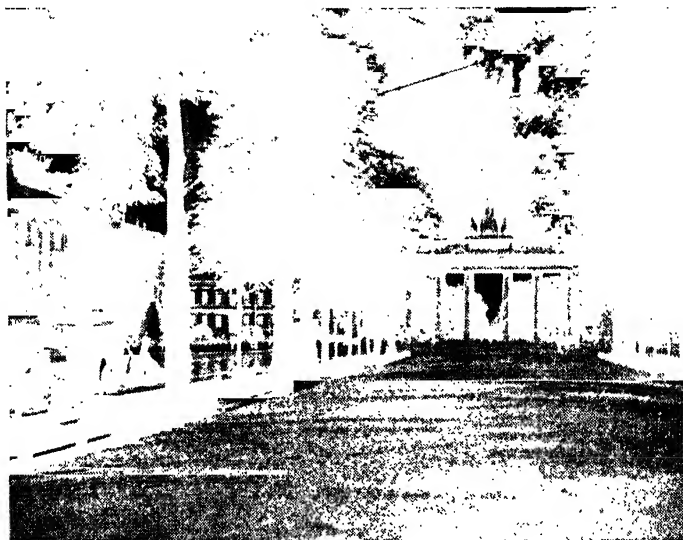
Berlin, city of Germany in the prov. of Brandenburg, cap. of the former Ger. Reich, also (before the Second World War) cap. of the republic of Prussia, seat of the former royal and imperial palaces, of the Federal Council (Bundesrat), of the (pre-1945) Republican Parliament (Reichstag), of the Prussian Parliament (Landtag), and of all the chief administrative and gov. offices of the Ger. republic, with the exception of the Supreme Court of

Justice (Reichsgericht), which is at Leipzig. The R. Spree flows through the city from the S.W. to the W., and the confluence of the Spree and the Havel is at Spandau, to the W. of Greater B. The city lies 84 m. from Stettin and 180 m. from Hamburg. It covers an area of 340 sq. m., and the pop. in 1939 was 4,332,242, so that in point of pop. the city ranked fourth after London, New York, and Tokyo.

Industries. The industry and commerce of the city showed rapid growth

the city. There are electric tram lines, an overhead electric railway, and a shallow underground railway. The Spandau and Teltow canals link B. to the R. Havel, and thus connect it with the systems of the Oder and the Elbe.

Education. The Friedrich Wilhelm Univ. was founded in 1810, and through its association with many famous names it came to hold an important place in European scholarship and learning. The institution at Charlottenburg and other technical and scientific schools and



D. McLeish

UNTER DEN LINDEN AND THE BRANDENBURG GATE IN 1939

after the Franco-Ger. war of 1870. By 1939 its industries were almost as varied as in London. The woollen industry is the oldest estab., and grew to cover a number of allied trades. The chief industries, however, came to be in the manuf. of machinery, especially locomotives and electrical machinery. Dyeing, furniture-making, brewing, and metalwork are also important. B. began to rival Leipzig in book production. It also became the chief centre and market for the E. European trade in corn and other cereals. Consequent upon the city's commercial importance, its banks and stock exchange exercised increasing international influence.

Communications. B. was (before 1945) the centre of the Prussian state railway system, and the junction of 12 main lines. The city itself is served by an outer circle (Ringbahn) and by the Stadtbahn, running E. and W. through

colleges, with numerous general schools of all grades, also helped to make B. an educational centre of the first importance.

Buildings. The following account of the chief streets and buildings of B. describes briefly the growth and adornment of the city under the Empire, the Republic, and the Third Reich as it appeared before the devastation of the Second World War. The prin. streets are Unter den Linden, leading from the royal palace in the Schlossplatz W. to the Brandenburg Gate (built 1789, a copy of the Propylaea at Athens); S. lie the banking street, Behrenstrasse, and the Wilhelmstrasse, the official quarter, where was the Reich Chancellery. Fine shops and restaurants lined the Friedrichstrasse; Viktoriastrasse was one of the many thoroughfares of the fashionable dist., S.W.: Königstrasse and Kaiser Wilhelmstrasse were the business streets of the city proper. Outside the Brandenburg Gate

lies the Tiergarten, a beautiful park crossed by the Siegessallee (1901), with its marble statues of Hohenzollern rulers, given by the last emperor. The Tempelhoferfeld, to the S., was the parade and review ground of the B. garrison. The royal palace, standing in the Schlossplatz, was one of the few old buildings in B., dating from the sixteenth century; it contained over 600 rooms, including the great Weissesaal and the halls of the Black and Red Eagle orders, etc. Other palaces were those of the Emperor William I. and of Frederick III. The Parliament House, N. of the Tiergarten, was designed by P. Wallot. The only old churches were the Marienkirche and Nikolaikirche. The new cathedral, by J. Raschdorff, was begun in 1893. The most striking bridge is the Schlossbrücke, by F. Schinkel, with colossal marble figures. No city had so many statues and monuments to the national heroes, king or military, or to those famed in literature, science, and art. The royal library, once in the palace, but subsequently in a building built in 1909 on Unter den Linden, contained nearly 5,000,000 printed books. The univ. library was housed in the same building. There was a large public library and 28 municipal libraries. The royal museum, in the Lustgarten, N. of the Schlossplatz, divided into the old and the new museums, contained the treasures of classical and medieval sculpture, the Egyptian collection, etc. The National Gallery contained the modern Ger. paintings. In the Kaiser Friedrich Museum (1904) was housed the magnificent art collection of paintings, medieval bronzes, etc.

History and Administration. The nucleus of the tn. were the 2 small palaces of Kölln and B., on the arms of the Spree. Here Frederick II. (the Iron) built a castle, and John (Cicero) made it a court of the Brandenburg electors. It suffered greatly during the Thirty Years war, and it was not till the time of the Great Elector and his successor that the tn. grew and were consolidated as one under its present name. After the Napoleonic wars, much of the city was rebuilt, mainly under the influence of F. Schinkel, but its rise to the position of a cap. city of the first importance dates from the formation of the Ger. Empire. The city consequently grew with the expansion of trade and the centralisation of gov., and increased from a pop. of 826,000 in 1871 to 2,000,000 in 1905, and 3,000,000 in 1910. This growth in pop. meant that since 1878 the city was practically rebuilt. Sanitation, water supply, and public hygiene were reorganised, and overcrowding obviated by an extension of the city's boundaries. In 1911 a plan was carried out to bring the city and the tns. of Charlottenburg, Lichtenberg, Neukölln, Schöneberg, Wilmersdorf, with the administrative areas of Teltow and Niederbarnim, under a common authority for the administration of streets, roadways, and the elevated railway. Common police regulations were to be in force in

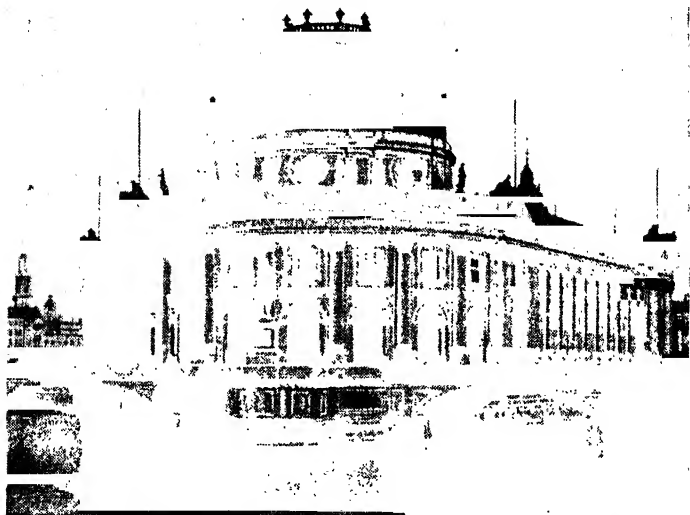
these places. Under the scheme large areas of land suitable for development were to be acquired. The scheme became operative on Apr. 1, 1912, and functioned during the 1914-18 War, but after the armistice it was deemed desirable to effect further co-ordination in the municipal gov. and services. After protracted discussions between the different authorities concerned, a common basis of agreement was reached, and a Bill was passed in the Prussian Constituent Assembly on Apr. 27, 1920, to establish a new municipality of B., which would take under its administrativeegis all the usual services and other matters of general application to the area as a whole; but a large measure of self-control in strictly local affairs was left to the dists. which had been absorbed. The municipal gov. covered schools, poor law, hospitals, water supply, drainage, lighting, etc. The city council consisted of paid and unpaid officials, and the elected common council was presided over by an *Oberbürgermeister*, and a *Bürgermeister*. The police authority extended over building, markets, crime, and trade.

The old familiar provincialism of the city, which was dear in the eyes of many Gers., disappeared, and during the second decade of the twentieth century the city became more European in character and less Ger. It was a formless city, never having been Germany's natural centre. It lies on the edge of the Reich, not only geographically but also historically and culturally. Under the Nazi regime a programme was laid down to make B. the focus of Ger. pride and the centre of Ger. culture as understood in the Third Reich. By this time, B. already covered an area of 340 sq. m.—a larger area than that occupied by any other tn. in the world except Los Angeles—and as regards pop. it ranked fourth. The municipal authorities planned in the expectation that in a further 40 years B. would become the cap. of central Europe with a pop. of 10 million inhab. Greater B. was, in fact, almost a country in itself, stretching from Staaken to Schmokwitz, from Buch to Wannsee, and embracing within its area lakes, cornfields, and fir woods. With its fields and windmills standing between its factories, B. served as a model of what the municipal authorities hoped the whole Reich would become in time.

In 1939 Germany entered upon a war, fully believing that its cap. city would remain invulnerable. Its leaders pledged themselves to this. The city became, however, one of the most heavily bombed of all the cities of Europe. Some of its severest trials under air attack came in 1943. In Jan. of that year it was bombed 4 times, including the first daylight raid, which marked the beginning of the offensive of the U.S. Eighth Air Force. In Mar. with an improvement in weather conditions, the R.A.F. returned to the attack, and on Mar. 27 made a concentrated raid with a powerful force of 4-engined bombers carrying 900 tons of high-explosive and incendiary bombs. The sixth attack of the year was on Mar. 1, when a heavy

concentric raid was made, lasting 30 minutes. Strong defences were encountered on the outskirts of the city. As a result of these raids various gov. depts. were transferred to other cities, including the central offices of the Gestapo, which were moved to Prague, and the foreign ministry, which was moved to Vienna, while the majority of the schools were evacuated to Lodz and Poznan. By this time, also, about 500,000 of the inhabs. were sent into Poland. On the night of Aug. 23, 1943, a

land, and the travel agency, Mitteleuropäisches Reisbüro, in the Leipziger Platz were destroyed. The only building comparatively undamaged in the Wilhelmstrasse was the Reich Chancellery. The total losses also included the Hotel Kaiserhof in the Wilhelmsplatz, and the Ger. Foreign Office. By this time the Luftwaffe had been driven underground, and B. was a wrecked, cold, hungry city, in which food, fuel, and tobacco were bartered for clothing. But the largest force of R.A.F. bombers, chiefly Hal-



BERLIN: THE KAISER FRIEDRICH MUSEUM

'The Times'

strong R.A.F. force of 700 bombers, manned by 5000 airmen, broke through a strong fighter screen and dropped 1700 tons of bombs on B. in 50 minutes, for the loss of 58 bombers and 1 fighter. Large-scale damage was done by this raid, especially to the central parts of the city, including the Mittelstrasse near Unter den Linden, the Wilhelmstrasse, and also the outlying industrial dists. of Siemensstadt and Spandau, while the railway stations, the Potsdamer, Anhalter, and Stettiner were ruined. Terrific damage was again wrought by the R.A.F. in attacks on the nights of Nov. 22, 23, 1943, the destruction being particularly great in the central dists. The whole way from the Potsdamer Platz, through the gov. quarters around Wilhelmstrasse, and towards the Tiergartenstrasse was a sea of fire and smoke. The Columbus Haus skyscraper was burnt out, the landmark Haus Vater-

faxes and Lancasters, attacked the cap. on the night of Feb. 15, 1944, when more than 1000 aircraft dropped 2500 tons in 30 minutes, while Mosquitoes followed them to hamper the work of B.'s fire brigades. The raiders lost 43 aircraft. Another big attack was made in co-ordination with the allied invasion of Europe when, on June 21, 1944, more than 1000 Flying Fortresses and Liberators of the U.S. Air Force escorted by 1200 Lightnings, Thunderbolts, and Mustangs bombed various targets in Berlin, for the loss of 43 machines. With the advance of the Soviet army, B. also became threatened from the land. By Feb. 21, 1945, Marshal Zhukov's forces were within 34 m. of the city. Air attack continued, the raid of Mar. 18 by a U.S. force of 1300 Liberators and Fortresses being the largest daylight attack B. had yet sustained. Over 3000 tons of bombs

were dropped. On land the Amer. Ninth Army had reached the Elbe, 70 m. from B., on Apr. 11, 1945. The same month the Soviet forces were fighting over the approaches to the city, and, on May 2, the city surrendered to Marshal Zhukov. For further details of the Russian military operation against B., see EASTERN FRONT IN SECOND WORLD WAR. After the cessation of hostilities, Greater B. was occupied by the forces of the U.S.S.R., the U.S.A., Great Britain, and France, and the city was administered by an Inter-allied gov. authority.

About 75 per cent of the city was literally destroyed in the Second World War; 25 per cent of the buildings remained habitable, though dilapidated and partly damaged. Generally speaking, these houses which were still intact were in the outlying residential areas, so that the pop. (3,000,000 in 1946) of the city then had about one-fourth of its former living space. In the central parts most buildings were gutted. Thus the Charlottenburger Chaussee from the Adlon Hotel to the former technical high school was burnt out. This was typical of the main arteries. In the Tiergarten only a few trees survived the bombs, the fires, the shelling, and the fuel shortage. All secondary roads, lanes, and passages seemed to have disappeared, buried under a wild growth of rough grass, rubble, and dirt. In the Diplomaviertel and, opposite, the more bourgeois Hansaviertel or residential area, everything was lifeless, and nothing seemed so deathly as the few crippled statues, wretched survivors of Kaiser Wilhelm's monstrous Siegesallee, lying decapitated in a wilderness of cabbage, grass, and dirt. Eighteen months after the war was over the streets had been cleared, and the ruins looked much tidier than in most Ger. cities. Late in 1946 day by day new shops with minute windows and nothing to sell began to appear all over B., though mainly in the W. Anglo-Amer. zone. Pre-Hitler parties were revived. The old trade unions came back. Newspapers with new names copied, almost unintentionally, the manners of the past. Less than 1 per cent of the famous old cafés reopened with nothing to offer except coloured synthetic lemonade. The scene at the end of the year was a hollow show of political meetings, violent newspaper polemics, foodless cafés, dancing, well-dressed men without home or hope of work, shops without wares, serious concerts and frivolous cabarets, election campaigns, and skilled workers drawing a weekly wage worth five cigarettes on the black market. All around was the passionate hope of a return to 'normality' where nothing could be normal for the simple reason 'that yesterday's social order, its symbols and values, had simply vanished into nothingness' (Paul Anderson, *Impressions of Berlin*, 1946).

In 1948 the introduction of the W. Deutsche mark improved the situation for most Berliners. The ensuing Russian ban on rail, road, and canal movements from the W. into B., however, forced the

three W. powers to supply essentials by air. At the end of Oct. negotiations had failed to obtain the lifting of the blockade.

See A. Rutenberg, *Das alte Berlin*, 1913; J. Laforgue, *Berlin and its Environs*, 1923; E. Kaebler, *Berlin Im Weltkrieg*, 1921; id., *Erforschtes und Erlebtes aus dem alten Berlin*, 1917; Baedeker.

Berlin, tn., Coos co., New Hampshire, U.S.A. The falls of the Androscoggin R. provide the power for the large pulp, paper, fibre, and saw mills. Pop. 19,000.

Berlin, Congress and Treaty of (June 1878), a convention of the representatives of the chief European powers called by Prince Bismarck. The object of the treaty was the reconstruction of the Russo-Turkish treaty of San Stefano (1878). The congress met under the presidency of Prince Bismarck at B. Great Britain was represented by Lord Beaconsfield, Lord Salisbury, and Lord Odo Russell. By the treaty Rumania, Servia, and Montenegro were recognised as independent states. The boundaries of Bulgaria were enlarged, and it became an autonomous Turkish trib. state under an elected prince. Rumelia also became self-governing, under a Christian minister-in-chief, but was still held under the power of the sultan. The boundaries of Greece were also enlarged. Bosnia and Herzegovina were transferred to the control of Austria. Rumania obtained the Dobrudja, and in return ceded to Russia the Bessarabian ter. she took from Russia at the treaty of Paris. Ardahan, Kars, and Batum were ceded to Russia. Most of these provisions stood unchanged until the First World War (see, however, BOSNIA AND HERZEGOVINA; RUMELIA, EASTERN). But they have been very profoundly modified (see peace treaties after the First World War: LAUSANNE, TREATY OF, 1923; NEUILLY, TREATY OF, 1919; ST. GERMAIN-EN-LAYE, TREATY OF, 1919; and VERSAILLES, TREATY OF, June 28, 1919; and also ASIA MINOR; Bessarabia; and YUGOSLAVIA).

Berlin, Irving (b. 1888), Amer. songwriter, b. in Russia; his parents migrated to the U.S.A. in 1933. Educated, for 2 years only, at public schools. His songs have been so popular in the U.S.A. that he became president of an incorporated company for their production. Among the best known of his compositions are *Alexander's Ragtime Band* and *When I leave the World Behind*.

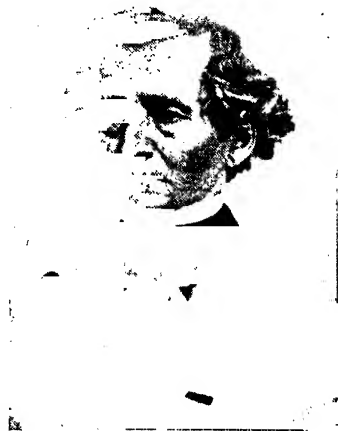
Berlin, Pact of (1940), alliance between Germany, Italy, and Japan, signed in Berlin on Sept. 27, 1940. Its essential provisions were contained in the third article; after promising mutual respect for the new order (see NEW ORDER) in Europe under Germany and Italy, and the new order in 'Greater East Asia'—a significant acceptance of that vaguely minatory phrase—under Japan, the 3 signatories undertook to 'assist one another with all political, economic, and military means when one of the three contracting parties is attacked by a power not at present involved in the European War or the Chinese-Japanese conflict.'

Only 2 Powers of the first rank came within this definition—Soviet Russia and the U.S.A. But the pact then went on to exempt Russia by the specific statement that the prevailing relations between that state and the contracting parties were not affected. The purpose of the pact was therefore to try to weaken the resistance of Britain by an alliance against the United States, and to limit the scope of the European War by raising a menace which might deter the U.S.A. from either active or even indirect intervention. Yet even if the U.S.A. should intervene in the Pacific, it was not clear how Germany or Italy could put forth any further effort in a form that could be of any real use to Japan; but if the U.S. should take positive action in Europe, Japan appeared to be committed to a declaration of war. But at least Japan might reasonably have expected Germany to use her influence over the Vichy Gov. (see EUROPE: History; FRANCE: History) to facilitate her ultimate absorption of the whole of Fr. Indo-China, in which Japan then already had a foothold. She might, too, have counted on Hitler's bringing diplomatic pressure to bear on the U.S.S.R. which would restrain Russia from interfering with Japan's southward advance. But there were very soon to be disillusionments in this nefarious bargain; for Hitler, pursuing his own objectives with the harassed Fr. Gov. at Vichy, evinced but little concern to promote Jap. ambitions in the E., and Japan's pressure for a base at Saigon met with a rebuff from Vichy. One good effect of the pact of Berlin was to deal the death-blow to the lingering spirit of Brit. appeasement; for the Brit. Gov. decided to reopen the Burma Road on Oct. 18 and thereby allow munitions to find their way to the Chinese forces. The prospect that the Axis (*q.v.*) would challenge America for the sake of Japan or that Japan would defy her in the interests of the 2 other contracting parties dwindled in the face of the vigorous reaction of the U.S.A. to the dual threat implied in the pact.

Berlin Spirit, a potable spirit distilled from comparatively inexpensive material, such as potatoes and beetroot. It contains a large proportion of deleterious by-products, and is used for adulterating brandy and fortifying wines of poor quality.

Berlioz, Hector (1803–69), Fr. composer, b. near Grenoble, the son of a doctor; was trained for that profession, but broke with his family, and after many difficulties entered the Conservatoire. He gained the Prix de Rome in 1830 with a cantata, *Sardanapalus*. His *affaires du cœur* were characteristic of his inborn romanticism and artistic associates, and, like Ronsard, he was for ever seeking a new charmer to distract him from the loss of an earlier love and becoming heartbroken over some real or fancied neglect on either side. Almost crazed by the indifference of Harriet Smithson, the Irish Shakespearian actress, he consoled himself by turning to a pianist who afterwards achieved distinction as Mme Pleyel. Having lost

Mme Pleyel, he seems in 1833 to have overcome Harriet Smithson's opposition, but their marriage was unhappy and they separated in 1840, B. having an affair with Mlle Recio, a singer with whom he toured Europe. During this period he wrote the dramatic symphonies, *Episode de la vie d'un artiste*; *Harold en Italie*; *Symphonie funèbre et triomphale*, which contains a magnificent march for a military band; and *Roméo et Juliette*. From 1838 to 1864 he was musical critic for the *Journal des Débats*. His opera *Benvenuto Cellini* was refused a hearing in Paris, 1837. In 1846 he produced his most



BERLIOZ

popular work, the symphonic cantata *La Damnation de Faust*. His sacred work include the requiem, *Grand Messe des Morts*, 1837; *Te Deum*, 1855; and the trilogy, *L'Enfance du Christ*, 1855. His last works were *Beatrice et Bénédict*, 1861, and *Les Troyens*, 1863. In 1842 he had first visited Germany, where, owing to Schumann's praise in the *Neue Zeitschrift für Musik*, he was received with enthusiasm by the new school, as he was later in Vienna and St. Petersburg. He d. in Paris. B. was one of the prin. exponents of 'programme' music, but his fame will rest chiefly on his original mastery of orchestration, in which his romantic imagination found full scope. A great musician, the influence of B. is felt to-day in European music; he is really the origin of all that revolutionary movement which has been carried on, in the search for new forms, by the Fr. musicians during the last half-century and more. He was, above all, a marvellous inventor of orchestral sonorities. His faults, the results of impatience of discipline, have

no doubt turned away many musicians, but these have nevertheless not seldom profited from his discoveries. B. had the soul of a poet and his 'fiery romantic periods of genuine creation attained an admirable balance and transferred into the language of tone the harmonies brought to light by Virgil' (Henry Prunières). Dr. Scholes's opinion is that B. 'is little likely to be appreciated, even when well interpreted, by those who know nothing of his life and of the literary and artistic school to which he was attached—the school that on enormous canvases or in 3-vol. novels depicted scenes of horror, glory, or passion.' His *Traité d'instrumentation*, 1844, has been ed. with additions by Richard Strauss, 1906. His *Memoirs and Letters* were pub. in 1870 and 1882; see selections, Eng. translation, in Dent's Everyman's Library. See also Alfred Ernst, *L'Œuvre dramatique d'Hector Berlioz*, 1884; W. H. Hadow, *Studies in Modern Music*, 1894; Filson Young, *Master Singers*, 1908; Breitkopf and Hartel's ed. of complete works, 1911; J. G. Prod'homme *Unpublished Berlioziana (Music Quarterly)*, Apr. 1918. The standard life is by Adolphe Boschot (3 vols.), 1906–13; others by Adolphe Jullien, 1888; J. G. Prod'homme, 1923; W. J. Turner, 1934; T. S. Wotton, 1935; J. H. Elliot (Dent's Master Musicians series), 1937.

Berme, or **Berm** (Ger. *Berme*, the edge of a field), technical term of fortification, both temporary and permanent. In the former kind of fortification it is the name given to an earthen mass which separates the parapet from the ditch, and whose function is to uphold the weight of the parapet in order to prevent it from causing the earth of the scarp to fall in. In permanent fortification the B. is a block of freestone which crowns the scarp and, projecting slightly over the ditch, serves the same function as the temporary B. When public works are in course of construction, the narrow passage between the canal or ditch and the earth which is excavated therefrom, is called a berme.

Bermejo, Rio, riv. of Argentine Republic, rising on Bolivian frontier and flowing S.E. into the R. Paraná. Much of its course is navigable by shallow-draught vessels. Total length over 1000 m.

Bermeo, seaport of Vizcaya, Spain, on bay of Biscay, 14 m. N.E. Bilbao. Pop. 10,000.

Bermondsey, metropolitan bor. of the S.E. dist. of London, Eng., on the S. side of the Thames. Rotherhithe and part of B. form the B. div. of the parl. bor. of Southwark. The prin. industry is that of leather, but the Surrey Docks and riv. wharves employ a large amount of labour. Nothing now remains of the Cluniac abbey, 1399. Pop. 112,000.

Bermudas, group of is. in the W. Atlantic Ocean, 32° 15' N. and 64° 51' W., 580 m. off Cape Hatteras, the nearest point on the N. Amer. coast. According to Juan Bermudez, the Sp. navigator and historian, B. was discovered at some earlier date than that of his own visit in 1515 but the exact date is unknown.

In Peter Martyr's *Legatio Babylonica* there is a map, pub. in 1511, which shows the is. in an approximately accurate position. In 1609, when Admiral Sir George Somers's ship the *Sea Venture* was wrecked on a reef off the is., they were uninhabited. This reef was afterwards known as the Sea Venture Flat. Somers, who had escorted sev. other ships containing a body of settlers, d. the following year, and his companions, ignorant of the prior claims of Bermudez, named the is. after Somers. Reports of the fertility and beauty of the is. induced the Virginia Company to petition for an extension of their charter so as to embrace the B. James I. granted their petition, but the company soon after sold the is. to a body called The Governor and Company of the City of London for the Plantation of the Somers Is. In the ensuing two or three decades the is. were prosperous under the administration of this company but, later, the gov. was neglected and the settlers became subject to so many grievances and abuses that in 1679 they appealed to the Crown for redress. A writ of *quo warranto* (q.v.) against the Bermuda Company was successful and the administration was transferred to the Crown. The first General Assembly for the B. was held at St. George in 1620, and when the gov. passed to the Crown, the commission to the first royal governor confirmed the grant of representative institutions. Geologically the is. are formed of eolian limestone deposits and coral reefs, being the N. limit of the coral builders. There are some 260 is., of which all but 20 are small, uninhabited rocks, forming an oval ring, lying N.E. to S.W. The total area is 19 sq. m. Great Bermuda, or Main Is., 14 m. long, contains the cap., Hamilton (pop., 3000); the only other tn. is St. George (pop. 1000), on that is., which, with Paget, Smith, and other is., encircles Carth Harbour, N.E. of Main Is. At St. George is the great floating dock, 545 by 100 ft., towed out in 1902 to replace the earlier one of 1869. The islets of Ireland, where is the naval station, Somerset, etc., enclose the Great Sound at S.W. of Main Is. There being no streams or wells the is. are entirely dependent upon rainfall. The vegetation is nevertheless prolific; the juniper or Bermuda cedar grows in great quantities, and was formerly invaluable in ship-building. The temperate climate, 87—49°, makes the B. a popular winter resort for Amers. and Canadians, and there is considerable export trade in early onions, potatoes, and green vegetables, spring flowers, and lily bulbs to the U.S.A. Agriculture is the chief industry, and it is entirely in the hands of small tenants. Arrowroot and bananas are grown, and fish is plentiful around the coasts. The quantity of shipping is remarkable for so small a place. All meat, flour, and such necessities have to be imported. On account of the strategic position of the group, there are a military garrison and a naval dockyard and station. A railway (21½ m.) connects Hamilton, Somerset, and St. George, crossing the sea inlets or

bays at a dozen points. Regular round trips are made by the *Monarch of Bermuda* (27,000 tons) of the New York-Bermuda service. There are about 105 m. of colonial and 15 m. of military roads. Bermuda is a naval base on the N. Amer. and W. Indies station. During the First World War it sent 2 contingents to France, and also contributed £40,000 towards the cost of the war. The pop., excluding army and navy, is about 32,000, about 12,300 being white. The is. are a Brit. crown colony, administered by the governor and commander-in-chief, an Executive Council, Legislative Council, both appointed by the Crown, and House of Assembly (36), elected by the 9 pars., 4 members each. The franchise was extended to women in 1944. The B. are included in the diocese of Newfoundland. Facilities for the setting up and use of naval and air bases on the E. coast of Bermuda and on the Great Bay were granted in Sept. 1940 to the Gov. of the U.S.A., and in 1944 a training base for ships of the Royal Canadian Navy was estab. A conference was held in Bermuda early in 1946 between Great Britain and the U.S.A. to settle routes and rates of the air services between their respective ports. The agreement, which arose out of this conference, was pub. as a White Paper (Cmd. 6747). See Hellprin, *Bermuda Islands*, 1889; Coles, *Bermuda*, 1907; W. B. Hayward, *Bermuda, Past and Present*, 1923; H. M. Chapin, *Bermuda Privateers, 1625-1708*, 1925.

Bermudez, a state in Venezuela, S. America, has been divided into 3 states: Anzoategui, Monagas, and Sucre.

Bern, or **Berne**, canton of Switzerland; area, 2650 sq. m. The fertile valleys of the Aar and the Emmen divide the mountainous alpine region in the S. from the Jura Mts. in the N. Among the peaks of the Oberland are the Jungfrau, the Schreckhorn, the Elger, etc.; among the lakes of the canton are those of Thun, Neuchâtel, and Bienné. The prin. riv. is the Aar. The N. part of the canton is hilly; it produces corn, wine, and fruits. The S.E. part, the Oberland, produces fruits in its lower valleys, and excellent pasturage higher up. Cows and horses are reared, the horses of Emmenthal specially being noted; the lakes abound in salmon and trout. Quarries of sandstone, granite, and marble are worked, and iron mines, whilst a little gold is also found. The manufs. of the canton, which are not extensive, comprise linen and woollen goods, leather, wood articles, and watches. The canton, which is made up entirely of lands acquired by the city B. at various times, has a pop. of 689,000.

B., the cap. of the canton, and political cap. of the Swiss confederation, is situated on a high sandstone promontory, surrounded on 3 sides by the R. Aar; it is 68 m. S.S.W. of Basle. It is one of the best-built tns. in Europe. There is a magnificent Gothic cathedral, dating from the fifteenth century; a univ., the Federal Palace, a museum, public library, etc. The streets in the old tn., flanked with arcades, are those of a prosperous

eighteenth-century tn.; the numerous fountains mostly date from the sixteenth century. The chief industries are weaving, spinning, and the manuf. of machinery and chocolate. B. also trades in cheese, wine, coal, and cattle. It is celebrated for its splendid views of the Alps. B. was founded in 1191, and became a free imperial city in 1218, and gradually attained a state of independence. Between 1288 and 1339 it successfully resisted attacks by Rudolf of Hapsburg, Albert his son, and Louis of Bavaria. In 1405 much of the city was destroyed by fire, but was rebuilt. In 1528 B. embraced the cause of the Reformation, and in the ensuing war with the duke of Savoy added the Pays de Vaud to its dominions. From then till 1798 B. continued to prosper; in the latter year it opened its gates to the Fr. troops, and lost about half its possessions. The origin of the name of the tn. is said to be from old Swabian *bern*, meaning a bear, and certainly a bear is represented on the first known tn. seal, of the date 1224. Ever since 1513 bears have been kept in B. at the public expense, and the bear-pit is one of the sights of the tn.

Bern Convention, see under COPY-RIGHT.

Bernadotte, Jean Baptiste Jules, see CHARLES XIV. (of Norway and Sweden).

Bernalda, tn. in the prov. of Potenza, Italy. It is about 35 m. S.W. of Taranto. Pop. 6000.

Bernanos, Georges (1888-1948), Fr. novelist and polemic writer, b. in Paris, of mixed Lorraine and Sp. descent. Educated at a Jesuit college in letters and law. Began as an insurance official. Fought in the First World War, being awarded the Croix de Guerre. Contributed articles to minor periodicals and, at 38, took up literature as a career, his first novel being *Sous le soleil de Satan* (1926). His theme is almost always the struggle for the soul of man between the forces of good and evil, which he portrays with originality and intense conviction. In 1928 appeared *L'Imposture*, the portrait of the inner soul of an unbelieving priest, a masterpiece comparable with Duhamel's *Salavin*. In 1929 came the novel *La Joie*; in 1936 *Journal d'un curé de campagne*, trans. (1937) as *The Diary of a Country Parson*, which won him a European reputation. B., like Mauriac, stands firmly on the Rom. Catholic position, and is a severe critic of fallen humanity; hence some critics have regarded his *La Grande Peur des bien-pensants* — Edouard Drumont (1931) as really a condemnation of Catholics in the vein of works by Léon Bloy and Péguy. Other works: *Les Grands Cimetières sous la lune* (1938), a polemic against France and his followers of remarkable power; *Nous autres Français* (1939), on the decline of spiritual values. B. went to Brazil in 1939 in voluntary exile, and there wrote *Lettre aux Anglais* (1942), his sympathies being with de Gaulle and the allies. His last work was *Monsieur Ovine* (1946), a complex work of fiction on his misgivings about the future of Christian civilization.

Bernard (*A.* 865), It. traveller in Palestine, called Sapiens who has been confused with a Scottish monk of the same name. He set out from Rome, between 863 and 867, to Palestine, and on his return went to the monastery of Mont St. Michel, in Brittany. To him has been attributed a work, *De Ipsa Urbe Hierusalem et de multis adjacentibus Locis*, and also a short tract, of which a manuscript exists at Oxford and another in the Brit. Museum. Consult *Early Travels in Palestine* (Bohn's Antiquarian Library, 1847).

Bernard, Claude (1813-78), Fr. physiologist, *b.* near Villefranche; began the study of medicine in 1834 and worked with Majendie at the Collège de France, becoming deputy prof. in 1847, and succeeding him the chair, 1855. His prin. researches and discoveries were in the digestive function of the pancreas, the sugar-making (glycogenic) secretion of the liver, and, perhaps his most epoch-making, the discovery of the vaso-motor system. His study of the action of poisonous drugs, chiefly curare, is also of importance. He pub. *Introduction à la médecine expérimentale*, 1866; *Physiologie générale*, 1872; but his work is best judged by the 17 vols. of his lectures (*Leçons*); see his life by Sir M. Foster, 1899.

Bernard, Edward (1638-97), Eng. oriental scholar and mathematician, *b.* at Towcester, Northamptonshire; 1655, elected scholar of St. John's College, Oxford; studied Hebrew, Syriac, Arabic, and Coptic; 1669, Christopher Wren appointed B. his deputy in the Savilian chair of astronomy. B. supervised the reprinting of the old mathematicians. He *d.* at Oxford.

Bernard, Jean Jacques, Fr. playwright, son of Paul B. (*q.v.*); *b.* at Enghien, July 30, 1888. His best plays are *L'Ami en peine* (1921), *Martine* (1922), and *L'Invitation au voyage* (1924). In vivid contrast with the mockery and satire of the elder B., the younger's work is notable for penetrating psychology and is often concerned with the secret, almost inarticulate, purgatory of the soul. This is exemplified in *Le Feu qui reprend*, his earliest production.

Bernard, Mountague (1820-82), Eng. lawyer, *b.* at Tibbington Court, Gloucestershire. He studied at Trinity College, Oxford, of which he became a Vinerian scholar and fellow; he was called to the Bar at Lincoln's Inn, 1846. He was influenced by the High Church movement, and became one of the founders of the *Guardian*, 1846. He was appointed the first prof. of international law at Oxford, 1859-74. In 1871 he went to America, and was one of the high commissioners who signed the treaty of Washington.

Bernard, Paul (called Tristan) (1866-1947), Fr. author and dramatist, *b.* at Besançon, son of a house builder; educated at the lycées of Besançon and Condorcet. He graduated in law and took a post first in an aluminium factory (1887-90) and then in the Court of Appeal, Paris. Later he was sports

director at the Vélodrome Buffalo (1894-1896); then editor successively of various papers, including the *Echo de Paris*, *Gil Blas*, *Journal*, *Auto*, etc. This varied experience of life is reflected in his more ambitious plays and novels, his earlier work being vaudevilles of irony and mocking humour like: *Le Fardeau de la liberté*, 1897; *Franches hippées*, 1898; *Le Seul Bandit du village*, 1898; *Le Vrai Courage*, 1899. The best of his later plays are *Triple Patte* (with André Godfrenaux), 1905; *La Peau de l'ours*, 1907; *M. Codomat*, 1908; *Le Petit Café*, 1911; *Les Deux Canards*, 1913; *Le Prince Charmant: Ce que l'on dit aux femmes*, 1922; which, like his best novels, cleverly satirize human weaknesses. His novels include *Mémoires d'un jeune homme rangé*, 1899; *Un Mari pacifique*, 1901; *Amants et voleurs*, 1906; *Deux amateurs de femmes*, 1907.

Bernard, William Bayle (1807-75), Eng. dramatist, *b.* at Boston, U.S.A.; came to England in 1820; was clerk in the Army Accounts Office, 1826-30, later becoming a professional dramatist. His plays include: *The Pilot*, 1827; *Rip Van Winkle*, 1832; *The Man about Town*, 1836; *His Last Legs*, 1839; *The Round of Wrong*, 1846.

Bernard, St., of Clairvaux (1090-1153), mediæval saint, monk, preacher, and theologian, *b.* near Dijon in 1090, the son of a crusading knight; his mother was of a noble Burgundian family. He joined the newly founded monastery of Cîteaux, and in 1115 founded the daughter house of Clairvaux, of which he was the first abbot. His saintly and ascetic life, his preaching, and his reforming zeal made him the most influential churchman of his time, and the abbey the most important of Cistercian monasteries, from which during his life sprang some 90 other houses. From 1130 to 1138 he played the chief part in establishing Innocent II. in the papacy as against the anti-pope Anacletus, and thus ended the schism which threatened the Church. The elevation of his pupil, Eugenius III., to the papacy in 1145 made him almost a second pope. He presided at the condemnation of Abelard at Sens, and of Gilbert of Poitiers at Rheims, and by his preaching checked the spreading heresies in Languedoc. As preacher of the second crusade in 1146 he won Louis VII. of France and Conrad of Germany to take the cross. The disastrous ending shook his power, and his falling health and the call of his order prevented his undertaking the third crusade. He *d.* at Clairvaux, 1153, and was canonised by Alexander III., 1173. St. B. is one of the great figures of mediæval Christendom; apart from his political influence, the power of his preaching, and the example of his ascetic life, he stands out as the practical mystic opposed to the subtleties of scholastic theology. His voluminous writings include letters, sermons, and dogmatic and mystical treatises; some of his hymns are still used in Protestant churches. Complete works first pub. 1508; ed. by Mabillon, 1667; Eng. trans. Eales, 1889-95; see also J. C.

Morison, 1863. S. J. Eales, 1890. E. Vaccaudard, 1895. R. S. Storrs, 1893, and D'Haussonville, 1906.

Bernard of Morlaix, Fr. monk of the twelfth century, who belonged to the Benedictine order. He was the author of *De Contemptu Mundi*, a poem, which was pub. at Paris in 1843. It was complete in 3 vols., each containing 1000 stanzas, and has been widely read in a translation by Neale.

Bernard-Beere, Mrs. Fanny Mary (*née* Whitehead) (1856-1915), Eng. actress, b. at Norwich, 1856; prepared for the stage by Hermann Vezin; first appeared at the Opera Comique. In 1877 she joined the St. James's company, London, taking the parts of Julia in *The Rivals* and Lady Sneerwell in *The School for Scandal*. She was engaged in 1883 by the Bancrofts for Sardou's *Fédora*, in which she scored a great success. In 1887 she became manager at the Opera Comique, and produced *As in a Looking-Glass*, *Ariana*, and *Masks and Faces*. She appeared at Wyndham's in *The End of a Story* in 1902, and at the Coliseum in *The Spy*, in 1905.

Bernardin de Saint-Pierre (1737-1814), Fr. author and engineer, b. at Havre; educated at Caen; became an engineer and entered the army, but was dismissed and travelled over Europe till 1765, when he settled in Paris. His work, which is influenced by Rousseau, and deals almost entirely with sentimental and imaginative themes, has influenced Fr. prose style. His best-known books are: *Voyage à l'Île de France*, 1773; *Études de la nature*, 1783-88; *Paul et Virginie*, 1787; *La Chaumière indienne*, 1791; and *Harmonies de la Nature* (pub. posthumously). His works and correspondence were collected with a life by Aimé Martin, 1818-20. See also biographies and critical studies by Lescure, Maury, and Arvède Barine.

Bernardines, name sometimes given to the Cistercian order of monks. See CISTERCIANS.

Bernardino of Siena, Saint (1380-1444), It. Franciscan friar, b. at Massa di Carrara. Entered Franciscan order, 1404; appointed vicar-general, 1438. He restored the strictness of the early monastic rule, was famed as a preacher and wrote sev. mystic works. He founded the Frates de Observantia, a branch of the Franciscan order, numbering over 300 monasteries in Italy in his own times. B. was canonised as a saint, 1450. His writings were pub. in Venice, c. 1594, again in 1745, and in Paris in 1636. Consult Mary Allies, *Three Catholic Reformers*, 1879.

Bernau, tn. of Brandenburg, Germany, 13 m. N.E. of Berlin. It has woollen, cotton, and silk weaving industries. Pop. 10,000.

Bernauer, Agnes, daughter of a poor barber-surgeon of Augsburg, was married secretly to Albert, eldest son of Ernest, duke of Bavaria, Munich, in 1432; banned from a tournament by his father for his apparent illegal connection with Agnes, Albert openly acknowledged her as his wife, but in his absence she was charged with witchcraft, condemned, and drowned in the Danube. One of Heibel's prin. tragedies, *Agnes Bernauer*, 1855, is based

on the story, and Otto Ludwig left an unfinished play on the same subject.

Bernay, tn. in the dept. of Eure, France, on the Charentonne, 31 m. from Evreux; pop. 5973. A great fair for Normandy horses is held annually, and there are cotton manufactories, and bleaching and dye-works. The abbey, round which the tn. grew, was founded in the eleventh century. Pop. 7500.

Bernays, Jakob (1824-81), Ger. philologist, b. in Hamburg, of Jewish parentage; educated at the univ. of Bonn, where he became librarian and prof. in 1866. His works, dealing with classical philology and Gk. philosophy, were ed. by Usener and pub. at Berlin in 1885. His most important book is an ed. of Lucretius, 1856.

Bernburg, tn., Anhalt, Germany, till 1865 cap. of the duchy of Anhalt-B. Pop. 35,000. In the Bergstadt, on r. b. of the Saale, is the old ducal castle. Machinery and boiler-making, pottery and chemical works were the chief industries.

Berne, see **BERN**.

Berners, John Bouchier, Lord (1467-1553), Eng. translator, son of Sir Humphrey B. (a descendant of Edward III.), who was killed at the battle of Barnet, fighting for Edward IV. John was sent to Oxford at an early age. Henry VIII. made him chancellor of the exchequer for life; he was also made governor of Calais, where he d. At the king's command he trans. the *Chronicle of Froissart*, 1523-25, the work being printed by Pynson; *The Golden Book of Marcus Aurelius*, 1534; *History of Arthur of Lytell Brytaine* (Brittany); and the *Romance of Huon of Bordeaux*. He also wrote a comedy called *Ite in Vineam meam* (Go to my vineyard).

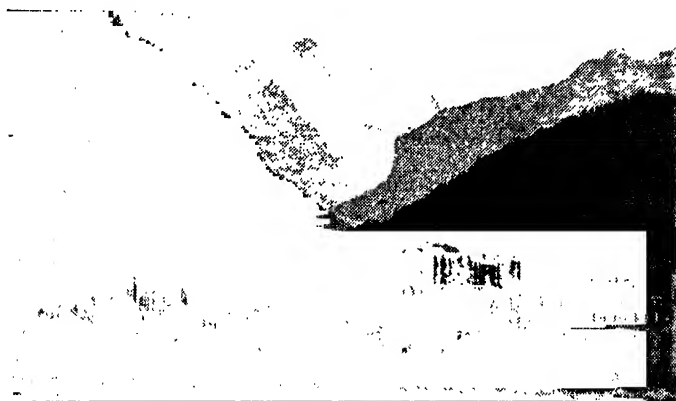
Berners, or **Barnes**, Juliana (b. 1388), reputed author of the *Boke of St. Albans*, a treatise on hawking and hunting. The first eds., of which 3 copies remain, appeared in 1486. It seems likely she was the prioress of Sopwell nunnery, near St. Albans. Having passed her girlhood at court, she must have retained her love of field sport after entering the convent. John Haslewood, who pub. a facsimile of the work in 1811, claims that she is the earliest Eng. author of her sex.

Bernese Oberland, strictly the upper country or 'highlands' in the S. of the canton of Berne, Switzerland, but often extended to include the range of the Alps from the upper Rhône valley northwards, and from the lake of Geneva to the lake of Lucerne, thus lying also in parts of Valais, Vaud, Fribourg, Lucerne, Uri, and Unterwalden. It is the most frequented of Alpine dists. by tourists and visitors, not only in the summer but also in the winter. The chief centres from which expeditions are made are: Thun, the cap. of the B. O., which formed a separate canton of the Helvetic Republic, 1798-1802; Interlaken, 17 m. by rail from Thun; Schynige Platte, Lauterbrunnen, and Grindelwald, one of the most frequented resorts in Switzerland; Melringen, the meeting-place of many routes; Mürren and Kandersteg. The prin. peaks of the B. O. are the Finsteraarhorn, 14,096 ft.;

the Aletschhorn, 13,721; the Jungfrau, 13,669 (the splendid view from Interlaken is famous); Mönch, 13,468; Gross Schreckhorn, 13,386; Gross Viescherhorn, 13,285; Eiger, 13,042; the 3 peaks of the Wetterhorn, 12,166, 12,149, and 12,110. The views from the Sparrhorn, 9928, Eggishorn, 9626, are well known. The highest passes are Lauithor, 12,140, Mönchjoch, 11,680, and Jungfrauoch, 11,385, leading to the Eggishorn from Lauterbrunnen, Grindelwald, and the Wengern Alp respectively. The Gemmi, 7641, leads from Kandersteg to Leukerbad, the Grimsel, 7100, with a carriage road, from Meiringen to the Rhône glacier, and the Great and

and Thaur, and the capture of one of the strongest fortresses in Europe, Brelsach.

Bernhardi, Friedrich von (1849-1930), Ger. general and author, b. at St. Petersburg (Leningrad), son of Theodor von B., a diplomatist. He entered the army in 1870, and fought in the Franco-German war; later became military attaché at Berne, and was appointed a general of cavalry in 1908. He retired in 1909, and wrote *Germany and the Next War*, a complete and undisguised exposition of Pan-Germanism and the Ger. ideal of *Weltmacht*. B. may be regarded as a disciple of Nietzsche and Treitschke, but went beyond them in the frank proposal of the



Swiss Federal Railways

INTERLAKEN AND THE JUNGFAU (13,699 ft.) FROM THE NORTH

Little Scheidegg, 6434 and 6772, from Grindelwald to Meiringen and Lauterbrunnen. The 3 largest glaciers in the Alps are in the B. O., viz. the Great Aletsch, 16½ m., the Unteraar, and the Fiescher, 10 m.

Bernesque Poetry (*poesia bernesca*), see BERNI, FRANCESCO.

Bernhard of Saxe-Weimar, Duke (1604-1639), Protestant general of the Thirty Years war, was the youngest son of John, third duke of Saxe-Weimar. At the beginning of the war he was present at the defeats of Wieslock, Wimpfen, and Stadtlohn, 1622-23. He joined Christian IV.'s Dan. army in 1625, and later rose to high rank in the army of Gustavus Adolphus. His leadership in command at Lützen, 1632, after Gustavus's death, and his successful invasions into Germany and Bavaria made him the most formidable opponent of the Imperialists. In 1623 he captured Regensburg, but was crushingly defeated by Gallas at Nördlingen in 1634. On the entry of France into the war he took service with her, still being general in command of the Protestant forces. His campaign of 1638 was successful with victories at Rheinfelden, Wittenwehler,

ruthless means for attaining the end of immediate Ger. world dominion. The book was held to establish Germany's aggressive designs, which culminated in the invasion of Belgium in 1914. A second book by B., *The War of the Future*, was pub. in 1921.

Bernhardt, Theodor von (1802-87), Ger. historian and diplomatist, b. in Berlin. He wrote on historical subjects, his works including *Denkwürdigkeiten aus dem Leben des Russischen Generals Karl Friedrich von Toll*, 1856-58, and *Geschichte Russlands und der Europäischen Politik in den Jahren*, 1814-31, 3 vols., 1863-77.

Bernhardt, Sarah (1845-1923), Fr. actress, b. in Paris, Oct. 23, of a Jewish family named Bernard, the eleventh of fourteen children. She was baptised with the name of Rosine and was brought up in a convent school at Versailles. After gaining prizes for tragedy and comedy at the conservatoire she appeared in a small part in Racine's *Iphigénie* at the Comédie Française in 1862; in 1867 she joined the Odéon company and made her first marked successes as Zanetta in Coppée's *Le Passant*, 1869, and as the Queen in Hugo's *Ruy Blas*. Returning to the Française

after the Franco-German war, her great performances in the title role of Racine's *Phèdre* (1874), the test part of Fr. tragedy, and as Doña Sol in Hugo's *Hernani* (1877), proclaimed her as the successor to Rachel's vacant place on the Fr. stage. In 1880 she broke with the Comédie Française on the production of Augier's *Les Aventuriers* and had to pay heavy damages. She began her triumphal tours of the world, appearing principally in Sorbie's *Adrienne Lecouvreur*, Dumas fils's *Dame aux camélias*, and Melhac and Halévy's *Frou-Frou*. Sardou's plays *Fédora*, *Théodora*, *La Tosca*, and *Cléopâtre* were specially written round her emotional and magnetic personality. These with Richépin's *Nana*, *Sahib* and Barbier's *Jeanne d'Arc* were her chief successes during her occupancy of the Porte St. Martin theatre (1883-90). During these years and from 1891 to 1893 she visited not only the chief tns. of Europe and the U.S.A., but also Australia and S. America. She moved to the Renaissance Theatre in 1893 with Jules Lemaitre's *Les Rois*, where she also played in Sardou's *Gismonda*, 1894. In the first of Rostand's poetic dramas, *La Princesse lointaine*, 1895, she created the part of Mélisande, to be followed by Photine in the same author's religious drama, *La Samaritaine*, 1897. Her appearance in *Magda*, 1895, a Fr. trans. of Sandermann's *Heimat*, marked a new departure, to be followed (1899) by her impersonation of Hamlet, a doubtful though daring experiment. She repeated the impersonation of male characters as the hapless duke of Reichstadt in Rostand's *L'Aiglon* in 1900 at the Théâtre Sarah Bernhardt. Her adaptation of De Musset's *Lorenzaccio* and the revival of Hugo's *Angelo* must be noticed. Gifted with a wonderful voice, which could range over every note of human passion, and with a vivid personality the 'divine Sarah' represented at its highest the emotional as distinct from the intellectual type of actress. To compare her playing with that of Eleonora Duse in such parts as *Magda* or the *Dame aux Camélias* is to realise the creative powers of two actresses of distinct schools of art. It was perhaps the freedom given for her emotional style that was the special appeal made to S. B. in the constructed and mechanical plays of Sardou. She married in 1882, a member of her company, M. Jacques Damala, a Gk., from whom she separated in the following year. There was one son, Maurice Bernhardt. As a result of an accident, her right leg—inclusive of the thigh—was amputated in Paris, Feb. 22, 1915. Nevertheless she continued to act, and toured in America 1917. In London, Apr. 1921, she played a man's part in Verneuil's *Daniel*. In 1913 she had received the cross of the Legion of Honour; she became officer in 1921. Her life has been written by Jules Huret, 1889; Sir G. Arthur, 1923; and M. Baring, 1933. See also her autobiography, *Ma Double Vie*, 1907, Eng. trans. 1908.

Bernhardy, Gottfried (1800-75), Ger. philologist, b. at Landsberg, Brandenburg; was prof. at Berlin Univ., 1826-29, and afterwards prof. in Halle Univ. and direc-

tor of the Philological Seminary. His works include: *Grundriss der römischen Literatur*, 1830; *Grundriss der griechischen Literatur*, 1836-45, and an ed. of Suidas, 4 vols. 1834-53.

Berni, Francesco (1597-1535), It. comic poet. His popularity is evidenced by the fact that since his time burlesque poetry is referred to as *poesia bernesca*. Having held a secretaryship at Rome, he gladly renounced what was to him a drudgery for a canonry in the cathedral of Florence. His fame rests largely on his complete revision of Boiardo's *Orlando Innamorato*, which was the basis of Ariosto's masterpiece, *Orlando Furioso*. His witty, graceful verse forms a pleasant contrast to the unpolished lines of Boiardo.

Bernicia, A.-S. kingdom, said to have extended from the Tyne to the Forth; the first king was Ida, 547-59, and his cap. Bamburgh. In 605 Æthelfrith united the S. independent kingdom of Deira with B. as one kingdom, Northumbria. After the death of his conqueror Edwin, 633, it was divided again, but shortly afterwards the Bernician dynasty under Oswio became supreme. The see of the bishopric of B. was at Lindisfarne and later at Hexham.

Bernicle, see BARNACLE.

Bernicle, or **Barnacle**, Goose (the *Anser bernicla*), Arctic bird which visits Britain in winter. It receives its name from an auct. fable that it was an offspring of the barnacle (q.v.). It is about 2 ft. in length, weighs about 5 lb., is black and white in colour, marbled with blue and grey, the beak is black, streaked with red. It was bred in Britain by the earl of Derby in 1834, and its flesh is used for food.

Bernier, François (d. 1685), Fr. traveller, b. at Angers in Anjou; took the degree of doctor at Montpellier; he set out on his travels in Palestine and Egypt; left Egypt and went to India, and was physician for 8 years to the Mogul Emperor Aurangzebe. He wrote on his return to France a *History of the Empire of the Great Mogul*, which appeared in 1670, and a continuation of this the next year; they were reprinted under the title of *The Travels of François Bernier*, and have been trans. into all European languages.

Bernina, name of a mtn., Piz B., 13,304 ft., and of a pass, 7645 ft., in the Rhaetian Alps, canton of Grisons, Switzerland. The pass, over which there is a carriage road, leads from Pontresina, Upper Engadine, to Tirano in the valley of the Adda, Italy. The B. Alps form a group lying between the Maloja and the Reschen Scheldeck passes. The Piz B. was first climbed in 1850.

Bernini, Giovanni Lorenzo (1598-1680), It. sculptor, painter, and architect, was invited by Pope Urban VIII. to submit designs for the embellishment of St. Peter's at Rome. The splendid colonnade was the fruit of the invitation. In 1663 he was called to Paris by Louis XIV., and although his design for the Louvre was rejected in favour of Perrault's, he returned to Rome enriched by gifts as well as honours.

Bernoulli, or **Bernoulli** name of a family of mathematicians and scientists. Originally residents of Antwerp, they were driven by the persecution of the Spaniards to find refuge first in Frankfurt, and afterwards in Basle:

Jacques Bernoulli (1654-1705), *b.* at Basle, was esteemed in his own day as a versifier in Latin, Ger., and Fr. He taught himself the elements of geometry against his father's wishes, and from 1676 to 1682 travelled in France, England, and Holland. In 1687 he was appointed to the chair of mathematics at Basel, where he remained until his death. Amongst other investigations, he solved Leibnitz's problem of the isochronous curve, determined the curve formed by a chain hanging between 2 supports and the curve formed by an elastic rod supported at one extremity and bent by a weight at the other.

Jean Bernoulli (1667-1748) was aided by his brother Jacques in his early mathematical studies, but has achieved a higher reputation as an independent discoverer. He became prof. of mathematics at Groningen, and after holding the position for 10 years, succeeded his brother in the chair of mathematics at Basel. His works are numerous and important, and amongst his discoveries was that of the exponential calculus. Three of his sons achieved distinction in mathematics.

Nicolas Bernoulli (1695-1726), son of the preceding; was appointed prof. of mathematics at St. Petersburg, but *d.* after holding the office for about 8 months.

Daniel Bernoulli (1700-82), brother of the preceding, studied medicine as well as mathematics, and in 1725 was appointed prof. of mathematics at St. Petersburg. In 1733, disturbed by the state of his health, he returned to Basel and occupied the chair of anatomy and botany. His work was concerned mainly with the investigation of the problems of hydrodynamics and consideration of the theory of probability with respect to some of the practical issues of life.

Jean Bernoulli (1710-90), the third son of Jean B., *b.* at Basel, studied in France, and became prof. of eloquence in Basel. He succeeded his father in the chair of mathematics in 1738. On three occasions he received the prize of the Academy of Sciences at Paris, his subjects being the capstan, the propagation of light, and the magnet.

Jean Bernoulli (1744-1801), son of the preceding; became astronomer royal at Berlin at the age of 19, and subsequently held the office of director of mathematical studies at the academy of Berlin.

Jacques Bernoulli (1759-89), brother of the preceding, studied law, but could not be restrained from his natural enthusiasm for geometry. After acting as a substitute for his uncle Daniel at the univ. of Basel for some time, he became prof. of mathematics at St. Petersburg in 1788.

Bernoullian Numbers, series of numbers used in determining the sum of certain mathematical series; named after Jacques Bernoulli (1654-1705). For example, the sum of the same powers of the natural

numbers from 1 to n may be expressed by the following formula, r denoting the power:

$$S_n = \frac{n^{r+1}}{r+1} + \frac{1}{2}n^r + B_1 \frac{r}{2}n^{r-1} - B_2 \frac{r(r-1)(r-2)}{4}n^{r-2} + B_3 \frac{r(r-1)(r-2)(r-3)(r-4)}{6}n^{r-3} + \dots$$

the signs of the series being alternately + and -, starting at the third term. The quantities symbolised by B_1, B_2, B_3 , etc., are known as B. N., the first six of which are $\frac{1}{2}, \frac{1}{6}, \frac{1}{42}, \frac{1}{30}, \frac{1}{42}, \frac{1}{42}$. Thus the sum of the series $1^2 + 2^2 + 3^2 + \dots + n^2$ becomes

$$\frac{n^3}{6} + \frac{n^3}{2} + B_1 \frac{5}{12}n^2 - B_2 \frac{5.4.3}{4}n + \text{zero} + \frac{n^6}{6} + \frac{n^5}{2} + \frac{5n^4}{12} - \frac{n^3}{12}$$

The value of the first 250 B. N. to nine figures in each case have been pub. by Glaisher in the *Cambridge Philosophical Society Transactions*, xii, 384.

Bernstein, **Eduard** (1850-1932) (Ger. democratic leader, and political writer, *b.* in Berlin, son of an engine-driver); was engaged for some time in journalism. On account of his political views he was obliged to leave Germany in 1878; he then resided in Switzerland, and with Bebel conducted the *Sozialdemokrat* at Zürich, 1881-90—moving to London in 1888, and living there until his return to Germany in 1901. He then became editor of the *Dokumente des Sozialismus*, and *Welt am Montag*. He was a member of the Reichstag 1902-6, 1912-18, and (for Breslau) since 1920. His works, mainly critical of the doctrines of Karl Marx, include *Gesellschaftliches und Privateigentum*, 1891; *Zur Geschichte und Theorie des Sozialismus*, 1901; *Die Geschichte der Berliner Arbeiterbewegung*, 1907; *Die deutsche Revolution*, 1921; *Sozialdemokratische Volkspolitik*, 1917; *Der Sozialismus einst und jetzt*, 1922; *Von 1815 bis 1872*, 1926.

Bernstein, **Henry** (b. 1876), Fr. dramatist, *b.* in Paris, of Jewish extraction. Was educated at Cambridge Univ. for two years, where he achieved distinction as an oarsman, but took no degree. He incurred criticism for leaving the army before his time, but in 1911 was allowed to re-enter it. Had a duel with Léon Daudet over this matter in 1911, when both were wounded. From the outset B. opposed Socialism; this and his bitter feeling towards the anti-Semites are apparent in his plays, a number of which have been performed in England. The best of the earlier plays are *Le Délour* (1902); *La Rafale* (1906); *Israël*, on an anti-Semitic theme (1906); *Le Voleur* (1907), the theme being a husband's discovery of his wife's theft; and *Samson*, 1909. In 1911 B. fought a bloodless duel with Francis Chevasu, dramatic critic of the *Figaro*, and there was further trouble on the production of his *Après Moi* at the

Comédie Française in the same year. Owing to the disorders instigated by the Camelots du Roy, the play was withdrawn, the only instance of such occurrence in the Fr. national theatre since the withdrawal of Sardou's *Thermidor* in the nineties. One of his greatest triumphs was *Judith* (1922), on the theme of the Biblical story, re-interpreted *suo more*, for Judith enters the tent of Holofernes no longer to save her people, but to play the *grande amoureuse*. Other plays: *L'Assaut* (1912) (Eng. translation *The Attack*, produced in 1924), which turns on the blackmailing of a political leader; *Félix* (1926); and *Mélo* (1929).

Bernstein, Herman, Amer. writer and diplomat, *b.* in Russia 1876, of Jewish parentage. He came to the U.S.A. with his parents in 1893, and finished his education in New York City. He acted as correspondent for the *N.Y. Tribune* with the American Expeditionary Force in Siberia. *The Willy-Nicky Correspondence*, pub. in 1918, was sensational in revealing the secret telegrams exchanged between the ex-Kaiser Wilhelm II. and Tsar Nicholas. In 1928 he pub. a biography of Herbert Hoover, who in the same year was elected President.

Bernstorff, Albrecht, Count von (1809-1873), Ger. diplomatist, *b.* at Drellutzw, Mecklenburg-Schwerin. He was sent as envoy to Naples, 1840; appointed ambassador at Vienna, 1848; Naples, 1852; London, 1854-61, 1862-73. In 1861-62 he acted as minister of foreign affairs.

Bernstorff, Andreas Peter, Count von (1735-97), Dan. statesman, *b.* in Hanover, the nephew of Johann Bernstorff. As minister of foreign affairs in 1773, he brought about the 'armed neutrality' compact with Russia, and adopted an anti-Swedish policy. His understanding with Great Britain as to the term 'contraband of war' displeased Russia and he was obliged to resign office in 1780. However, he was returned to power in 1784, and during the Fr. wars maintained a neutral policy. He was a keen supporter of Liberalism and of the freedom of the press, and brought about the emancipation of the serfs.

Bernstorff, Christian Günther, Count von (1769-1835), Dan. diplomatist, the son of Andreas Peter B., *b.* at Copenhagen, *d.* in Berlin. He became minister of foreign affairs, 1793-1810, and Dan. plenipotentiary at the Congress of Vienna, 1814. He entered the Prussian service in 1818, and was minister of foreign affairs from 1818 to 1831.

Bernstorff, Johann Hartwig Ernst, Count von (1712-72), Dan. statesman, of an anct. Ger. family; was educated by his grandfather, minister of George I. Having been for 6 years ambassador at Paris, for 21 years following he controlled the foreign policy of Denmark (1750-70), his adopted country. The settlement of the disputes between Russia and Denmark on the question of Holstein-Gottorp was not the least of his achievements. By the treaty of 1765, Catherine II. renounced all pretensions to Holstein.

Bernstorff, Johann Heinrich Andreas

Hermann Albrecht, Graf (Count) von, Ger. diplomat, *b.* in London Nov. 14, his father being Count Albrecht von B., Prussian minister—afterwards Ger. ambassador. Educated at the gymnasium at Ratzeburg (Lauenburg). In 1890 he was employed in the Foreign Office, and was secretary to the embassy in London, 1902-6. Then he was consul-general in Egypt until, in 1908, he was sent as ambassador to Washington. He married, and remained in America until the U.S.A. declared war in Apr. 1917. President Wilson sent to him notes protesting against the sinking by Ger. submarines of ships on which Amer. lives were lost. In due course B. presented notes to the President from the Ger. Gov. apologising, but the outrages continued. The public, rightly or wrongly, thought it was he who maintained an espionage system in the U.S.A., and that it was due to him that the Ger. language press in America adopted so violent an attitude in favour of Germany. In time his position became untenable, and he returned to Germany in 1917. For the next 3 years he was 'ier. ambassador to Turkey. In 1921 he entered the Reichstag as a Liberal delegate, and also became president of the League of Nations Union in Germany. In 1926 he headed the Ger. delegation to the League of Nations Preparatory Commission on Disarmament. When Hitler came to power in 1933, he went into self-imposed exile in Switzerland, and *d.* in Geneva. His book *Deutschland und Amerika: Erinnerungen aus dem fünf-jährigen Kriege*—trans. as *My Three Years in America*—was pub. in 1920.

Beroe, marine organism belonging to the coelenterate order of Ctenophora, subclass Nuda. It differs from the other genera of Ctenophora in having no tentacles of any kind, and in having a capacious stomodaeum resembling the cavity of a thimble. It is conical or oval in shape, and there is a coelenteric network all over the body, formed by anastomoses of the meridians and paragastric canals. It is transparent and gelatinous, and shines at night with phosphoric radiance, produced by the 8 bands of fused cilia, by means of which it moves.

Beroea: (1) Anct. name of Veria, or Kara-Feria, tn. of Macedonia, Greece, 35 m. S.W. of Salonika. It was besieged by Athens in 432 B.C., occupied by Rome in 168 B.C., and captured by Turkey in 1375 A.D. Paul preached there in A.D. 54. (2) Anct. name of Aleppo, cap. of a vilayet of the same name in N. Syria, on R. Kuweik, 70 m. E. of the Mediterranean. The name of Beroea was given it by Seleucus Nicator, and it is mentioned as Helbon (i.e. Aleppo) in Ezek. xxvii. 18.

Berosus, Babylonian priest, *fl.* c. 260 B.C. Josephus has preserved some fragments of his Babylonian-Chaldean history, which he wrote in Gk. They are considered trustworthy because he had access to native documents stored in the temple of Bel.

Berosus, genus of coleopterous insects of the family Hydrophilidae. The species inhabit ponds, in which they swim in an

inverted position, and they probably feed on vegetable substance. They are nearly oval in shape, and of a dusky yellow hue.

Beroun, see **BERAUN**.

Berre, tn. in dept. Bouches-du-Rhône, France. The salt-water lagoon, *Étang de B.*, covering nearly 60 sq. m., lies near the sea, with which it is joined by the canal de Bonc. N.W. is the Crau, an expanse covered with pebbles like a beach.

Berri, or **Berry**, former prov. of France, bounded by Orléannais on the N., Nivernais and Bourbonnais on the E., La Marche on the S., and Touraine and Poitou on the W. It now forms the depts. of Cher and Indre, and part of those of Creuse, Nièvre, and Allier.

Berri, or **Berry**, **Charles Ferdinand**, **Duc de** (1778-1820), *b.* at Versailles, 1778, a younger son of the comte d'Artois, afterwards Charles X. of France. At the revolution he escaped with his father to Italy, fought under Condé (1792-97), and came to England in 1801, where he married a Miss Anna Brown; this marriage was annulled in 1814, and in 1816 he married Caroline Ferdinande Louise, daughter of Francis I. of Naples, *b.* 1798, by whom he had a daughter, later duchess of Parma, *b.* in 1819, and a son, Henri, duc de Bordeaux, better known as the comte de Chambord (*q.v.*), *b.* posthumously, 1820, after his father had been assassinated by L. P. Louvel at the opera house, Feb. 13 of that year. After the revolution of 1830 the duchess landed in France in the hope of gaining the throne for her son; she was imprisoned, but on her secret marriage with Count Lucchesi-Palli being discovered, her political power vanished and she was released. She *d.* in Switzerland, 1870.

Berrima, township in Camden co., New South Wales, 40 m. N.E. of Goulburn. In a coal, shale, iron, and copper mining dist. Pop. 10,000.

Berrow's Worcester Journal, Britain's oldest surviving newspaper. Celebrated its 250th anniversary in 1941. In its early years it pub. only news of war and high politics, and it was a long time before any appreciable space was given to local affairs. When H. Berrow acquired it in 1748, his name was added to the title. Earlier files of the paper show that it sold not only news and advertising space, but books and stationery and even 'elixir for dropsy, powder for the gout, Hypo drops' and other remedies which the printer kept in his cupboard. After the death in 1894 of Charles Henry Birkbeck, one of its most noted proprietors, a number of local Conservatives, including Alfred Baldwin, M.P. (father of Lord Baldwin) and the then Lords Dudley and Beauchamp formed a private company and purchased it. In 1937 the control was acquired by Mr. Ivor Griffiths, and later developments include amalgamation with other newspaper concerns in Worcester and the absorption of its chief competitor, the *Worcestershire Advertiser*.

Berruguete, **Alonso** (1480-1561), Sp. painter, sculptor, and architect, the son of a painter, Pedro B. (*q.v.*). Charles V. appointed him court painter and sculptor

and superintendent of certain public building enterprises. B. completed the royal palace at Granada, and designed the town hall at Seville and the palace of the archbishop of Toledo at Alcalá. His finest piece of sculpture is 'The Transfiguration' in the Toledo Cathedral.

Berruguete, **Pedro** (*d.* 1503), Sp. painter who lived towards the end of the fifteenth century. Little is known of his life. Most of his paintings were hung in the museum at Madrid. The frescoes in the cathedral at Toledo are thought to be the joint work of B. and another artist. Other works attributed to him are the 'Miracles of the Life of St. Peter,' 'St. Thomas Aquinas,' and 'St. Dominic' (at Avila), and 'Christ in the Garden' and 'The Resurrection' (at Madrid).

Berry, name of a bacate or fleshy fruit, which differs from the drupe (*e.g.* cherry) in having no hard part but the seeds; while the drupe has a strong endocarp. All these fruits are soft and succulent, and have their seeds embedded in the pulp. Many so-called berries have no right to the name, *e.g.* the holly-berry, which is a drupe; the strawberry, a pseudocarp formed from an etærio of achenes on a fleshy thalamus; while raspberries and blackberries are etærios of drupes. True berries are the gooseberry, tomato, currant, bilberry, and grape, while the orange, melon, and cucumber come under this head, and the banana, in which over-cultivation has destroyed the seeds.

Berry, tn. of Camden co., New South Wales, on Berry R., 70 m. S.W. of Sydney.

Berry, **Sir Edward** (1768-1831), Eng. naval officer. In 1796 he first came under the notice of Captain Nelson, and for his services at the siege of Porto Ferrajo B. received promotion to the rank of commander. He distinguished himself for his daring at the battle of Cape St. Vincent. B. was captain of Nelson's flagship at the battle of the Nile, of which he later wrote a narrative. B. carried Nelson's dispatches home on the *Leander*, when he was taken prisoner by the Fr. He also took part in the battle of Trafalgar, 1805. He was knighted 1798; K.C.B., 1815; rear-admiral, 1821.

Berry, **James** (*f.* 1655), Eng. soldier and parliamentarian, *b.* in Shropshire. He enlisted under Cromwell and became one of his favourite officers. He fought at the battle of Gainsborough, 1643, where he slew Charles Cavendish. In 1647, B. was elected president of the council of adjutors in the disputes between Parliament and the Army. In 1655 he was sent to Nottinghamshire to suppress a rising there, and was subsequently made major-general of Hereford, Shropshire, and Wales. He sat in Parliament as member for Worcestershire in 1657, and was made a member of the council of state in 1659. B. took part in the overthrow of Richard Cromwell, which he afterwards regretted. On the Restoration, he was imprisoned for life in Scarborough Castle. According to Richard Baxter, however, B. was released and 'became a gardener, and lived in a safer state than in all his greatness.' The chief authority on B.'s life is Baxter

in his autobiography, *Reliquiæ Baxterianæ*.

Berry, Sir John (1635-90), Eng. admiral, b. in Devonshire. He first went to sea in the merchant service, his first naval appointment being in 1663, when he served as boatswain of the *Swallow* in the W. Indies. In 1667 he commanded a squadron against the combined forces of Fr. and Dutch near St. Nevis and St. Kitts. In 1672 he distinguished himself at the battle of Sole Bay, and was knighted for his services. His death, at Portsmouth, has been attributed to poisoning. Consult J. Campbell, *Lives of the British Admirals and Eminent Seamen*, 1779.

Berry, John Bennington (1851-1928), Amer. railway engineer, b. at Paterson, New Jersey; educated at the Polytechnic Institute at Brooklyn. He entered the railway service in 1874, and served successively, as assistant or chief engineer, the Chicago and N.W., the Union Pacific, and the Chicago, Rock Island and Pacific railways. Set up as railway consultant in Chicago in 1914 and wrote authoritatively on railway gradients.

Berry, Mary (1763 - 1852), Eng. authoress, b. at Kirkbridge, Yorkshire. In 1788 she and her younger sister, Anne, made the acquaintance of Horace Walpole, who held them in great affection, and left them in his will £4000 each and some property at Little Strawberry Hill. Mary B. collected and ed. the *Works of Horace Walpole*, 1798, and also pub. *England and France: a Comparative View of the Social Condition of both Countries*, 1844; and a *Life of Rachael Wriothseley*, 1819. See her *Journals and Correspondence*, 2nd ed., 1866.

Berry, William Ewart, see CAMROSE, BARON.

Berryer, Antoine Pierre (1790-1868), Fr. barrister and politician, the son of a distinguished advocate and supporter of the Bourbons. After the Restoration he defended Ney before the chamber of peers, and was successful in his defence of other of Napoleon's generals. His chief political trials in which he appeared for the defence were those of Lamennais, 1826, Chateaubriand, 1833, and Montalembert, 1838. Elected before the revolution in 1830, he remained the only legitimist deputy till 1851; a Liberal, he never ceased to further the restoration of the Bourbons. He was elected to the Academy in 1854. He d. at Angerville.

Bersaglieri, t.e. sharpshooters, a *corps d'élite* of infantry (rifemen) in the It. army. They were raised in 1836 for the Sardinian-Piedmontese army under King Charles Albert on the suggestion of Captain Alessandro La Marmora of the *Granatieri-Guardia* (Grenadier Guards), who was the original commander. They were trained in scouting, rapid marching, and shooting (*bersaglio* = target). Originally consisting of two companies, the B. before 1914 comprised 12 regiments, and, during the First World War, were expanded to 21 regiments. Their uniform is a dark blue with a red stripe and facings, but their chief distinguishing mark is the wide black slouch hat with heavy droop-

ing plumes of cocks' feathers. They have a distinguished record and are regarded with pride in Italy. They have participated in all It. campaigns. During the Crimean war 5 battalions served with the Allies, but their creator and leading spirit, La Marmora (then a general) d. of cholera. During the First World War their 3rd Regiment was awarded the Gold Medal for Valour, the highest It. distinction, for service on the Piave. In 1895 a cyclist company was added to the B. as an experiment, the success of which led to a general creation of cyclist companies in the army. Since 1928 the B. have been composed entirely of cyclists. In 1940 the It. army was reorganised, and provision made to include 12 regiments of B. in the infantry.

Berseem, or Bersim (*Trifolium alexandrinum*), Egyptian name of a species of white clover which thrives well on salt land newly reclaimed from the sea. In the Nile Delta it is grown as fodder for animals, and its cultivation prepares the land for subsequent crops.

Berserker (from the 'sark,' or shirt, of the bear, or the skins of other animals), name given, in Scandinavian mythology, to the 12 sons of the hero, Berserk, by the daughter of King Swafurilam, whom he had killed in battle. Berserk was the grandson of the fair Alfhilde and the eight-handed Starkadder. His sons inherited his martial fury, which was called berserker rage, as well as his courage. They so terrified their enemies that they were regarded as being possessed of an evil spirit. According to one legend they perished together in one combat.

Bersim, see BERSEEM.

Bert, Paul (1833-86), Fr. physiologist and politician, b. at Auxerre; first studied engineering, but then under the influence of L. P. Gratiolet became a pupil of the great physiologist Claude Bernard. He was prof. of physiology at Bordeaux and the Sorbonne, Paris. His prin. scientific researches and experiments were on the effects of air-pressure (*La Pression barométrique*, 1878), of the highest value for the disease known as caisson disease; on anaesthetics and respiration, and on the effect of light on plant growth. In 1876 he became a deputy, entering threw himself into politics as a violent anti-clerical; he was minister of education, 1882, in Gambetta's ministry; in 1886 he was appointed resident to Indo-China, and d. there at the end of the same year.

Bertani, Agostino (1812-86), It. revolutionist, b. at Milan. He practised medicine in Lombardy till the outbreak of the revolution of 1848, in which he was implicated. He organised the ambulance service during the Rom. republic, 1849, and, with Sir James Hudson, worked in Naples for the liberation of political prisoners. Later, he joined Garibaldi's force as a surgeon, and organised 4 Sicilian volunteer expeditions. When Garibaldi went to Naples B. became his secretary-general. In this capacity he superintended the police, abolished the secret service, and founded infant asylums. He entered Parliament in 1861,

and during his parliamentary career made inquiries into the sanitary conditions existing among the peasants. *Consult* his life by Mario, 1888.

Bertha, the name of sev. reigning princesses of the early Middle Ages: (1) Daughter of the Frankish Christian king, Haribert or Charibert, married Ethelbert (560-616), king of Kent. She brought to England her confessor, Bishop Lindhard; she was allowed by the king to practise her religion at her oratory, St. Martin's, Canterbury, and thus paved the way for the success of Augustine's mission. (2) Mother of Charlemagne, called Bertrada or Bertha Greatfoot. She was the daughter of Charibert, count of Laon, and married Pepin before 742. Round her have grown many legends set forth in Adenes's thirteenth-century romance *Berte aus grans piés*. Charlemagne married Bertha (or Desiderata), daughter of the Lombard king Desiderius. (3) Daughter of Otto, count of Savoy, wife of the Emperor Henry IV. (4) Daughter of Conrad of Burgundy, married Endes, count of Blois, and then Robert II., king of France (970-1031). (5) Daughter of Burkhardt of Thurgau, and wife of Rudolf II., king of Burgundy (912-37). Her deeds of charity and piety gained her the name of the Good.

Bertha, **Big**, nickname given to the specially prepared long-range Ger. naval gun (or guns) which fired on Paris from the neighbourhood of Coucy, a distance of 75 m., during the First World War. The name was in allusion to the fact that Frau Bertha von Bohlen was one of the proprietors of Krupp's (q.v.), which firm made the gun. Twenty-one shells, of over 200 lb. each, were fired on Mar. 23, 1918, the first day on which the gun was used against Paris, and thereafter there was intermittent firing for sev. months. It is difficult to estimate the total casualties, because sometimes the firing synchronised with bomb-dropping, but the deaths are variously given at between 100 and 200 for the whole period of firing.

Berthelot, **Marcellin Pierre Eugène** (1827-1907), Fr. chemist and politician, b. at Paris in Oct.; the son of a doctor. He was appointed a member of the staff of the Collège de France in 1851, at which time his long intimacy with Renan began. His paper *Sur les combinaisons de la glycérine avec les acides* made him famous in 1854, and in 1865 he accepted a chair of organic chem. in the Collège de France, an appointment which had been specially created for him. He succeeded Pasteur as permanent secretary to the Academy of Sciences in 1889. In 1895 he was minister of public instruction during the Goblet ministry. His works include many papers and books, among them, *Chimie organique fondée sur la synthèse*, 1860; and *Les Carbures d'hydrogène*, 1901; *Science et philosophie*, 1886; and *Science et morale*, 1897.

Berthelot, **Philippe Joseph Louis** (1866-1934), Fr. diplomat, b. at Sèvres, Oct. 9; son of Marcellin Berthelot (q.v.); educated at Lycées Saint Louis and Henri IV. He entered the diplomatic service in 1889,

and in 1920 was appointed secretary-general to the Ministry of Foreign Affairs, with rank of ambas. In 1922, as a result of inquiry into the affairs of the Industrial Bank of China, B. was suspended for 10 years. Under the premiership of Herriot in 1925 he was 'amnestied' and re-appointed secretary-general, and he was instrumental in the creation of the Little Entente.

Berthier, Pierre Alexandre (1753-1815), Fr. general; proclaimed the republic in Rome in 1798. As chief of the staff he accompanied Napoleon to Egypt, and also in the campaigns of 1812-14. On Louis XVIII's accession he surrendered Neuchâtel, of which he had been created prince in 1806, and submitted to the king. When Napoleon returned from Elba he committed suicide.

Berthierite, dark steel-grey mineral, composed of sulphides of iron and antimony. It occurs in elongated prisms, has a hardness of 2 to 3 and a sp. gr. of 4 to 4.3. B. is found in Auvergne and the Vosges, in Saxony, in Cornwall, and in Lower California. It receives its name from the Fr. chemist, Pierre Berthier (1782-1861).

Berthold von Regensburg (1220-72), Ger. Franciscan preacher, b. at Regensburg; educated in the Franciscan monastery there under David of Augsburg. His teaching was mainly directed against luxury, the abuses of so-called chivalry, and the vices of the clergy. His *Sermons* have been ed. by Pfeiffer and Strebl (2 vols. 1862-80), and by Göbel (trans. into modern Ger. 1873). See his life by J. Paul, 1896, and Unkel, 1882.

Berthollet, Claude Louis (1748-1822), Fr. chemist, b. at Talloire, in Savoy. He graduated in medicine at Turin, settled in Paris in 1772, and was elected a member of the Academy of Sciences in 1780. Five years later he declared himself a convert to the new theories of combustion propounded by Lavoisier, although previously he had pub. papers in support of the old. He helped Lavoisier to reform chemical nomenclature, and was the first to advocate the use of chlorine as a bleaching agent. As he regarded chlorine as oxygenated muriatic acid, he could not appreciate the nature of the chlorates which he discovered. He also devoted serious attention to the process of smelting and converting iron into steel. Napoleon proved for him a generous patron.

Bertholletia, genus of Lecythideae growing in tropical S. America, and having only 2 species. The tree grows to a height of about 100 ft., and branches gracefully near the top. The fruit is a spherical case as large as a man's head, with 4 cells, in each of which are 6 or 8 triangular seeds with hard and wrinkled shells. The seed is the Brazil nut of commerce, which is nutritious as a food and yields an oil well suited for lamps.

Berthon, Edward Lyon (1813-99), Eng. inventor, b. in London. He studied surgery at Liverpool and Dublin, and lived for some years (1834-40) abroad, where he experimented on screws for propelling ships. His model of a screw propeller was, however, rejected by the Admiralty,

though afterwards adopted. In 1841 he went to Cambridge, and took holy orders in 1845. His other mechanical inventions were 'Berthon's log' for measuring the speed of ships, an instrument for discovering the trim of a boat, and collapsible boats, which were first ordered by the Admiralty in 1873. He wrote his reminiscences under the title *Retrospect of Eight Decades*, 1899.

Bertie, Peregrine, Lord Willoughby de Eresby (1555-1601), Eng. soldier, son of Richard and Catherine B., Baroness Willoughby de Eresby. He was b. at Lower Wesel, Cleves, at the time of the Marian persecution in England. His family returned to England in 1559, when a patent of naturalisation was obtained for him. He married a daughter of John de Vere, earl of Oxford, and in 1580 succeeded to his mother's title. In 1585 he petitioned Frederick II. on behalf of Henry of Navarre; and was made governor of Bergen-op-Zoom, 1586, in succession to Sir Philip Sidney. Later, he succeeded the earl of Leicester as commander of the Eng. forces in the Low Countries. Subsequently he was placed at the head of an army which went to the assistance of Henry of Navarre at Dieppe, 1589, and was present at the capture of Vendôme, Mons, Alençon, and Falaise.

Bertie, Richard (1517-82), the husband of the duchess dowager of Suffolk, in her own right Baroness Willoughby de Eresby, and father of Peregrine B. (q.v.). He was b. in Hampshire, and became a scholar of Corpus Christi College, Oxford. He was attached to the household of Thomas Wriothesley, the lord chancellor; as his wife was not a Catholic, he felt the danger of living in England under the rule of Queen Mary, and in 1555 escaped with her to France, and after running great dangers, they finally were received by the king of Poland, and remained in that country till the death of Mary. He sat in Parliament in 1562-63 as a knight of the co. of Lincoln. There is a monument to his memory and to that of his wife in Spilsby church, Lincolnshire.

Bertie, Robert, first Earl of Lindsey (1582-1642), the eldest son of Peregrine B. (q.v.), and godson of Queen Elizabeth. He joined the Sp. expedition of the earls of Essex and Nottingham, and was knighted in the market-place of Cadiz, on its capture, 1597. In 1628, after the assassination of Buckingham, he was appointed admiral of the fleet, and headed an expedition (which failed) for the relief of La Rochelle. He loyally supported Charles I. during the Civil war, and d. from wounds received at the battle of Edgehill in 1642.

Bertie, Willoughby, fourth Earl of Abingdon (1740-99), Eng. statesman. He was educated at Westminster School and at Magdalen College, Oxford. He early made the acquaintance of Wilkes, whose democratic principles he supported. B. succeeded to the earldom in 1760, and frequently spoke in the House of Lords, taking care to procure the insertion of his speeches in the newspapers. His pub. numerous pamphlets, which include

Thoughts on Burke's Letter on Affairs of America, 1777, and *A Letter to Lady Loughborough*, 1798, which is a eulogy of the Fr. Revolution.

Bertillon System. Name given to a system of anthropometry invented by Alphonse Bertillon (1853-1914). It consists of measurement of certain parts of the human body, which he found by research to be practically unchanging after full growth. By these it is possible so to classify any individual as to be able to identify him without fail for the rest of his life. For police purposes this was invaluable, and Bertillon's system was adopted in most civilised countries. The essential measurements are these: (1) Length of head, (2) breadth of ditto, (3) length of middle finger, (4) of left foot, (5) of forearm from elbow to tip of middle finger. Each of these measurements was classified as small, medium, or large, and height, length of little finger, and colour of eyes were also observed. The measurements, however, had to be so extremely accurate, and required such carefully trained observers, that the process of 'Bertillonising' was slow and expensive. As the slightest mistake in one respect might vitiate a whole record, it was necessary to take the mean of at least three measurements. In 1897 the system was superseded in India by Galton's simpler and cheaper finger-print records, which were adopted in England three years later.

Bertin, Louis François (1766-1841), Fr. journalist, the 'father of Fr. journalism,' b. in Paris in Dec. 1766. He wrote for the *Journal Français* during the Fr. Revolution. He founded the *Journal des Débats* after the 18th Brumaire. In 1801 he was banished for suspected royalist tendencies. Three years later he returned, taking up the management of the paper. Meanwhile Napoleon had altered the title to *Journal de l'Empire*. Gov. censorship and control followed. He regained possession in 1814, still supporting the royalist cause till his death in 1841. He was of a family possessing many famous members, all of whom were concerned with the *Journal des Débats*.

Bertinoro, episcopal tn. of Forlì, Italy, 7 m. S.E. of Forlì. It has mineral springs. Pop. 9000.

Bertran de Born, Viscount of Hautefort in Périgord (b. c. 1140), Provençal troubadour, b. of noble family, near Limoges. He became a vassal of England by the marriage of Eleanor to Henry II. of England, and was patronised by Henry Curtmantle, son of Henry II. Dante has placed him (*Inferno*, canto xxviii.) among the sowers of discord in hell, where he appears carrying his severed head before him; this referring to the way in which he fostered and took advantage of the ill-feeling existing between the 3 sons of the king. During 1182-83 he joined with the barons of Limoges, Poitou, and Périgord in their revolt against Richard I. of England. He was besieged at Hautefort, and ultimately became reconciled to Richard. About 1196 he entered a Cistercian monastery at Dalon, where he d. early in the thirteenth century. H

poems, of which 45 are still extant, deal with 'arms and men,' and are either in praise of his patrons or depreciation of his enemies. The style is rough but effective, and the love-poems and two *planhs* on the death of Prince Henry, are tender and sincere. They have been ed. by Stimming, 1879 and 1892, and Thomas, 1888.

Bertrand, Henri Gratien, Count (1773-1844), Fr. general. He entered the army at the outbreak of the Fr. Revolution. He was made a colonel by Napoleon during the Egyptian expedition, and was afterwards his aide-de-camp at Austerlitz. Napoleon appointed him grand marshal of the court in 1813. In 1814 he accompanied Napoleon to Elba, and returned after Waterloo to St. Helena with him. After Napoleon's death he was elected deputy in 1830 in the reign of Louis XVIII., and later brought the remains of Napoleon to France. He d. at Châteauroux.

Bertrand, Jacques Louis (1807-41), Fr. poet, also known as Aloisius and Ludovic, b. at Ceva, Piedmont, d. in Paris. Son of a captain of gendarmérie, his mother being lt. His style, both in prose and verse, is marked by purity and rhythm; indeed, the love of language was almost an article of faith with him. His poetry was little in output but excellent in quality. He began his literary career with mixed verse and prose contributions in the *Provincial*, a Dijon publication. He was in Dijon again when the Revolution of July broke out, and he served it with enthusiasm, contributing to the Dijon publication, *Le Patriote de la Côte d'Or*. Most of his prose-poems were produced in Paris, where on his return he lived in poverty, yet delayed publication in spite of his condition. His most notable work, *Gaspard de la nuit*, was pub. at Angers, posthumously by his friends, the title being theirs. The best in the collection are *La Barbe pointue* and *Madame de Montbazou*.

Bertrand, Joseph Louis François (1822-1900), Fr. mathematician, b. in Paris; educated at the Polytechnic School. In 1856 he became a member of the Academy of Sciences, in 1874 perpetual secretary of that body, and in 1884 a member of the Fr. Academy. He pub. works on arithmetic, algebra, calculus, thermodynamics, and probabilities.

Bertrand, Louis Marie Émile (1866-1940), Fr. author, b. Mar. 20 at Spincourt (Meuse); educated at lycées Bar-le-Duc and Henri IV. From 1897 until 1900 he was prof. of classics at Aix, Bourg, and Algiers. His first novel, *Le Sang des races*, was pub. in 1899, being a tale of the Fr. pioneers in Algeria. Other novels: *Le Rival de don Juan*, 1903; *Mademoiselle de Jessincourt*, 1911; *Sanguis Martyrum*, 1918; *L'Infante*, 1920; *Cardenio*, 1922. His also written: *La Grèce du soleil et des paysages*, 1908; *Le Livre de la Méditerranée*, 1911; *Les Villes d'or*, 1921. In biography: *Saint Augustin*, 1913; *Louis XIV.*, 1923; *Sainte Thérèse*, 1927. Later works include: *Carthage*, 1930; *Le Roman de la conquête*, 1931; *Histoire d'Espagne*, 1932. Died at Cap d'Antibes, Dec. 6.

Beruni, or Al-Beruni (d. 440), Arabian historian, who fl. at Ghazni during the reign of the Emperor Mahmud. His works, dealing with Indian hist., include *India* (trans. 1888), and *Chronology of Ancient Nations* (trans. 1879).

Bervie, Charles Clément (1756-1822), Fr. engraver, b. in Paris. His full-length engraving of Louis XVI. from the portrait by Callet ranks among the finest works of its kind extant.

Bervie (Inverbervie), mrkt. tn. and seaport in Kincardineshire, Scotland. Pop. 1100.

Berwick, James Fitz-James, Duke of (1670-1734), illegitimate son of the duke of York, afterwards James II., by Arabella Churchill, the sister of the famous general, Marlborough. Educated in France, on his father's accession he entered the imperial army, serving his apprenticeship as a soldier in Hungary under the duke of Lorraine. Later he accompanied his father into exile, took part in the battle of the Boyne, and in 1690 was made generalissimo of the Irish forces on the side of James. Having witnessed the ruin of his father's cause at the naval battle of La Hogue, he transferred his services to France. In 1693 he was taken prisoner at the battle of Linden, but was exchanged for the duke of Ormonde. His attempt in 1696 to stir up an insurrection against William III. was a failure. After suppressing the religious wars in the S. of France, he distinguished himself, during the Sp. war of Succession, by defeating the allied forces under General Stanhope in the battle of Almanza.

Berwickshire, co. of Scotland, bounded on the N. by Haddingtonshire and the N. Sea; on the E. by the N. Sea; on the S.E. by Berwick; on the S. by the Tweed and Roxburghshire, and on the W. by Midlothian. Its area is 457 sq. m., and its coastline 21 m. There are 3 natural divs. of the co.: (a) Lauderdale, the valley of the Leader; (b) Lammermuir, the mountainous dist. of the hills of that name; and (c) the Merse (march or borderland), the widest area. The average height of the Lammermuirs is 1000 ft., and their highest peak is 1749 ft. (Mt. SAYS LAW). The coast of B. is precipitous, and only accessible at Eyemouth Harbour, Coldingham, and Burnmouth. St. Abb's Head rises to 310 ft. and possesses a lighthouse. Of the rivs., the Eye flows directly to the sea. The others, Leader, Eden, Leet, and Whiteadder, are tribs. of the Tweed. The largest of these is the Whiteadder. Small lochs are at Coldingham, Legerwood, and Spottiswoode.

The climate of B. is suitable for the cultivation of vegetables, and it is not severe in winter owing to its maritime situation. The prin. grain crops are oats and barley, though wheat is raised in parts. Sheep and cattle are pastured in large numbers. Fishing is second in the industries. The chief tns. engaged in the fishing industry are Eyemouth, Burnmouth, Coldingham, and Cove. The chief fish caught are cod, haddock, herring, ling, lobsters, and crabs. As far as mineral wealth is concerned, coal, copper-ore,

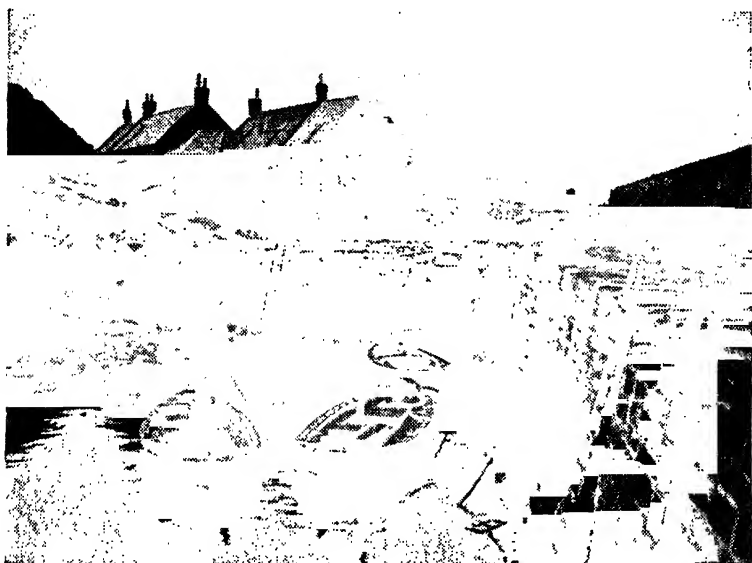
and ironstone exist, but in quantities too small to work, while the large deposits of limestone lie too far from the coal area to be of any value. Gingham and woollen cloth stuffs are manufactured at Earliston, while blankets and plaids are produced at Cumledge. Other industries are distilling and brewing. Pop. 27,000.

The hist. of the co. reveals traces of Rom. and anct. Brit. settlement. The co. became included in the kingdom of Northumbria after the Rom. occupation.

was taken from the Scots by the Eng. in 1174, 1272, 1295, retaken by the Scots under Bruce in 1318, by the Eng. in 1333, the Scots in 1353, the Eng. in 1354, surprised in 1377, taken by the first cannon ever used in England about 1406, and in 1551 declared a neutral ter. Pop. 12,300.

Berwyn, tn. in Cook co., Illinois, U.S.A. It is one of the residential suburbs of Chicago. Pop. 48,400.

Beryl, mineral consisting of silicates of beryllium and aluminium, represented by



'Scotsman'

FISHERMEN'S COTTAGES AND BOATS AT COVE HARBOUR, BERWICKSHIRE

In 1018 the co. was annexed to Scotland, but was taken by England finally in 1482. The co. contains many picturesque ruins, among them being Fast Castle, Cockburnspath Tower, Dryburgh Abbey, and Hume Castle. See F. H. Groome, *A Short Border History*, 1887; W. S. Crockett, *Minstrelsy of the Merse*, 1889, and *Berwickshire and Roxburghshire*, 1926.

Berwick-upon-Tweed, seaport, municipal bor., and administrative co. of England. It is situated at the mouth of the Tweed on its N. bank. Among its ruins are those of a bell tower which was used to alarm the neighbourhood during border raids. Of its public buildings the chief is the tn. hall (1760). The tn. is connected to the S. side of the riv. by 2 bridges. The prin. exports are grain, coal, and fish. Among its sea fisheries are those of the herring and salmon. The tn. has iron works and shipbuilding yards. It was one of the first 4 royal bors. of Scotland,

the formula $\text{Be}_3\text{Al}_2\text{Si}_6\text{O}_{18}$. It crystallises in hexagonal prisms, usually of a greenish colour. The transparent green varieties are known as emerald, and those possessing a bluish-green colour are termed aquamarine. Transparent B. is known as precious B., and the opaque varieties are known as common B. B. is widely distributed, being found in Aberdeenshire, the Mourne Mts. in Ireland, Siberia, Brazil, Ceylon, and many localities in the United States.

Beryllium, or Glucinum, metal of the magnesium group, discovered in the form of oxide in the mineral beryl in 1798. The oxide was first called glucina from the sweet taste of its salts, but was afterwards called beryllia by the Ger. chemists. The metal was first obtained by Wöhler in 1828 by reducing the chloride with potassium, when the metal appears as a dark grey powder. In 1855 Debray prepared it in a compact state by heating B.

chloride and metallic sodium in separate receptacles in an atmosphere of hydrogen. The metal thus produced has a sp. gr. of 1.64, is silver-white in colour, melts at a lower temp. than silver, and in the powdered state takes fire when heated in air. B. oxide, or beryllia, is obtained by fusing beryl with twice its weight of potassium carbonate. The molten mass is allowed to cool, and is then treated with sulphuric acid, the excess of acid evaporated off, water added, and the silica filtered out. On cooling, the liquor contains mainly the sulphates of B. and iron. It is poured into a hot and strong solution of ammonium carbonate, allowed to stand for some days, and then filtered. The filtrate contains the B., and on boiling B. carbonate is precipitated. The precipitate is redissolved in ammonium carbonate solution and steam blown through the liquid, when the beryllia is precipitated.

Beryllonite, mineral consisting of beryllium sodium phosphate, represented by the formula BeNaPO_4 ; discovered in Maine, U.S.A., in the form of orthorhombic crystals. It has been used as a gem.

Beryx, genus of acanthopterygious fossil fish of the family Berycidae. It was a deep-sea fish, perch-like in form, and some species, e.g. *B. ornatus*, are found fossilised in the chalk of Sussex.

Berzeline, or **Berzelianite**, silver-white mineral composed of copper selenide (Cu_2Se), occurring at Skrikerum in Sweden and also in the Harz Mts. B., as named by L. A. Necker, is a white translucent mineral found near Albano, and composed of silicates of aluminium, sodium, and calcium.

Berzelite, or **Berzelite**, yellow or yellowish-red mineral occurring as isometric crystals and consisting of orthoarsenate of calcium, magnesium, or manganese. It is found at Långban in Sweden. Pyrrharsenite, in which antimony takes the place of part of the arsenic, is lighter in colour and occurs at Örebro in Sweden.

Berzelius, **Jöns Jakob** (1779-1848), Swedish chemist, b. at Vätersunda Sörgård, Sweden. In 1818 he became perpetual secretary to the Stockholm Academy of Science. His special study was devoted to the significance of atomic and molecular weight, and he pub. a table of results remarkable for their accuracy. He held that the essence of chem. was based upon oxygen. Later he developed an acute interest in electrochemistry. He was the first to adopt the symbol system of alluding to chemical substances. His works include *Lehrbuch der Chemie* and *Jahresbericht*, both works notable for their literary quality besides their scholarship. Of the latter work, which was a yearly record of Stockholm Academy science progress, he issued 27 vols. He invented many improvements of the blow-pipe and threw much light upon the substances tellurium, selenium, silicon, thorium, titanium.

Bes, deity worshipped among the ant. Egyptians. He was the god presiding over art, song, dancing, and childbirth. He was also worshipped in Cyprus and

Phoenicia. He is represented as a deformed dwarf, dressed in panther-skins and with a feather crown.

Besançon, city of France in the dept. of Doubs, of which it is the cap. Hills surround its position on the l.b. of the Doubs, at the foot of the W. Jura Mts. A feature of the tn. is its shady promenades. It is the seat of an archbishop. The chief industry is watchmaking. Lesser industries embrace enamelling, saw-mills, printing works, and the manuf. of paper, boots, machinery, and artificial silk. A tunnel under the city allows the passage of the Rhine and Rhône Canal. The city is of great antiquity. In the time of Julius Caesar it was known as *Vesontio*, while Marcus Aurelius made it a *colonia*. Till 1789 it was the seat of a parlement. Pop. 60,000.

Besant, see **BEZANT**.

Besant, **Annie**, Mrs. (*née* Wood), (1847-1933), Eng. theosophist, b. in London. In 1867 she married the Rev. Frank B., vicar of Sibsey, Lincolnshire. In early life she was a ritualistic High Churchwoman, but became a free-thinker, and was legally separated from her husband in 1873. In the following year she joined the National Secular Society; she co-ed. with Charles Bradlaugh (*q.v.*), the *National Reformer*, and took a prominent part in its free thought and radical movement. She joined in various labour movements, became a member of the Fabian Society, and of the London School Board, 1887-90. In 1889 she became a pupil of Mme Blavatsky, and joined the Theosophical Society, of which she was president from 1907. She lectured on theosophy in all parts of the world, and founded at Benares the Central Hindu College, 1898, and the Central Hindu Girls' School, 1904. In 1910 she founded the Order of the Star, and devoted her energies to preparing the way for the 'new Messiah' whom she believed embodied in a young Indian named Krishnamurti, proclaimed by her as a 'world teacher.' Her later life associated chiefly with the advocacy of the cause of Indian Home Rule. She founded the Indian Home Rule League, and became its president in 1916. The Indian National Congress elected her its president in 1917, and she was interned by the Indian Gov. in the same year. She pub. her life, under the title *Through Storm to Peace*, 1893. Her many works include: *Reincarnation*, 1892; *Death and After*, 1893; *The Building of the Kosmos*, 1894; *Four Great Religions*, 1897; *Avataras*, 1900; *A Study on Consciousness*, 1904; *Theosophy and the New Psychology*, 1904; *The Wisdom of the Upanishads*, 1908.

Besant, **Sir Walter** (1836-1901), Eng. author, b. at Portsmouth on Aug. 14, the son of William B. During his education he passed successively through King's College, London, and Christ's College, Cambridge. In 1859 he graduated as eighteenth wrangler. An interest in young and inexperienced authors caused him to found a Society of Authors with the object of protecting the rights of new authors. This was founded in 1884, and

Sir Walter filled its chair till 1892. He married in 1895 Mary Foster-Barham, of Bridgwater, and shortly afterwards was knighted. On June 9 he d. at Hampstead. Though Sir W. B. plunged into many fields of literary art, his greatest success was in writing novels. He collaborated with James Rice in the production of the first of these works of fiction: *Ready-Money Morthoy*, 1872, and *The Golden Butterfly*, 1876, are two of the best. The influence of Dickens is apparent, not least in the vigour with which he portrayed social evils. The establishment of the E. End Institute, known as the People's Palace, in the Mile End Road, was one of the direct results of his powerful *All Sorts and Conditions of Men*, 1882, which he wrote alone. James Rice having died, The sweating evil next received his attention, and expression of his indignation was found in *Children of Gibeon*, 1886. Among other novels are *Dorothy Forster*, 1884; *Armour of Lyonesse*, 1890; and *Beyond the Dreams of Avarice*, 1895. Besides fiction, he wrote *The French Humorists*, 1873; *Rabelais*, 1879; and biographies of Whittington, Captain Cook, and Richard Jefferies. His monumental work, *A Survey of London*, on the list, and archaeology of London unfortunately was never completed. See *An Autobiography*, 1902.

Beseler, Hans von, Prussian general (1850-1921). At outbreak of the 1914-18 War he was on retired list, but was recalled. Engineering had been his specialty. He captured Antwerp in Oct. 1914. In Aug. 1915 he took a distinguished part in the siege of Novogeorgievsk on the E. front, and became governor-general of Poland until the armistice.

Besier, Rudolf, Eng. playwright; b. 1878, in Java, of Dutch parentage. Educated Elizabeth College, Guernsey, and Heidelberg. Sev. years a journalist, principally on the Pearson publications. Chief plays: *The Virgin Goddess*, 1906; *Oliver Latimer's Husband*, 1909; *Don*, 1909; *Lady Patricia*, 1911; *Kings and Queens*, 1915; *Buzell*, 1916; *Robin's Father* (with Hugh Walpole), 1918; *The Prude's Fall* (with May Edginton), 1920; *The Barretts of Wimpole Street*, 1930. The play last named is about the family of Elizabeth Barrett Browning.

Besika Bay, bay on the N.W. coast of Asia Minor. It is situated opposite to Tenedos, to the S. of the entrance of the Dardanelles. During the disturbances arising from the E. Question, 1853 and 1877, the Eng. fleet was stationed there.

Beskow, Bernhard von, Baron (1796-1868), Swedish poet and dramatist, b. in Stockholm. In 1825 he was appointed to the position of private secretary to the Crown Prince Oscar. He was director of the Royal Theatre in 1831-32. His chief works are the poems, *Karl XII.*, 1819, and *Sveriges Anor*, 1824, and the tragedies *Erik den Fjortonde*, 1827-28, and *Thorkel Knutsson*, 1830. See Rydqvist, *Bernhard von Beskow*.

Besna, or **Beshni**, tn. of Turkey, 50 m. N.W. of Urfa. Pop. 15,000.

Besnard, Paul Albert (1894-1934), Fr.

painter, b. in Paris; he entered the studio of Cabanel in 1866, and won the Prix de Rome in 1874. In 1882 he received a commission to paint frescoes for the School of Pharmacy. His prin. works are: 'Saint Benoit et enfant,' 'La Vie renaissante de la mort,' 'Femme qui se chauffe,' etc., and numerous delicate pastel drawings. In 1879 he married Charlotte Vital Dubray, a sculptor of some note. In 1924 he was elected a member of the Fr. Academy.

Bessan, see BEISAN.

Bessarabia, region of U.S.S.R., forming (with Moldavia) the Moldavian S.S.R. The R. Pruth separates it from Bukovina and Moldavia on the W. and Dobruja on the S. The R. Dniester divides it from the Ukraine on the E.; while the S. is bounded by the Black Sea and the N. by Ukraine. The area is 17,614 sq. m., and the pop., which is racially very mixed, is estimated at about 2,000,000. The chief tns. are Akkerman, Bender, Byeltsi, Izmail, Khotin, and Kishinev. Spurs of the Carpathians invade the N. at a height of 800 to 1150 ft. The soil is fertile and agriculture is the prevailing occupation, the chief crops being wheat, maize, barley, flax, tobacco, watermelons, fruit, vine, saffron, and madder. The central belt is rich in timber, while lower are the rich pastures of the Budjuk Steppes. Sheep, cattle, and goats are raised here. The climate is extreme, while the rainfall is over 25 in. annually. Manufs. are in their infancy, wine, cloth, iron goods, and soap being the chief articles produced. The name B. is derived from Bassarab, 'the Great Voyevod of all the Rumanian lands,' the founder of the first national dynasty, in the beginning of the fourteenth century. For centuries B. was under Tartar domination and suffered from frequent invasions of Ottoman Turks. The union with Russia in 1812 signified for B. liberation from Turkish despotism. In 1876, by the treaty of San Stefano, Russia received B. unconditionally, and its inhab. were granted Russian citizenship. In 1905, during the first revolution, after the Russo-Japanese war, an awakening of national spirit was experienced in B., but all attempts at independence were soon suppressed. In Sept. 1917, when the *ancien régime* was crumbling in Russia, a soviet of peasants' and soldiers' deputies was formed in Kishinev. The first Military Moldavian Congress took place in Kishinev in Oct. 1917. The congress decided to elect a local council, Sfatul Tseret, to govern B. It consisted of 162 deputies. In Nov. 1917, Sfatul Tseret declared B. to be autonomous, and later in the same year proclaimed B. the 'Moldavian Democratic Republic,' part of the Federation of Soviet Republics. But early in the following year B. withdrew from the federation and declared itself the 'Independent Moldavian National Republic.' This declaration of the formation of a new state was not acknowledged by any of the powers, and the phase lasted for 61 days only. Apparently the Moldavians felt incapable of maintaining an autonomous position,

for on Mar. 27 of the same year Sfatul Tsereli voted for political union with Rumania, and this was accepted by the Rumanian Gov. with certain conditions. Entirely unconditional incorporation with Rumania took place on Nov. 27, 1918, and next year B. for the first time sent its delegates to the Parliament in Bucharest. The union of B. with Rumania was acknowledged by the Supreme Conference of the Allies on Mar. 3, 1920, and also explicitly by the treaty of Paris, Oct. 28, 1920. The union remained a matter of controversy between the U.S.S.R. and Rumania, and negotiations at Genoa (1922) and Vienna (1924) led to no settlement. In 1939, following the Ger.-Russian partition of Poland, the Soviet threat to B. became evident, and as a result of the ultimatum of June 27, 1940, B. and N. Bukovina were ceded to Russia. In their invasion of Russia in 1941 the Gers. delivered a series of powerful thrusts from B. in the battle of the Ukraine during July and Sept. For some time the Russians held firm, and bombed Ploesti. After three weeks' fighting, however, the Gers. had secured B., which was not retaken until Apr. 1944. The cession of the ter. to the U.S.S.R. was confirmed by the armistice between the Allies and Rumania on Sept. 12, 1944. (See EASTERN FRONT IN SECOND WORLD WAR.)

Bessarion, John (c. 1395-1472), medieval scholar who was instrumental in spreading the knowledge of Gk. literature over the W. of Europe. When the Gk. emperor went to Italy to effect the union of the two churches B. accompanied him. Having joined the Rom. Church, he became bishop of Frascati, and later papal legate at Bologna. Pope Eugene IV. had made him cardinal, and he might himself have been pope but for his strong sympathies with Plato and other pagan philosophers. He bequeathed his valuable collection of Gk. MSS. to St. Mark's Library, Venice.

Bessborough, Vere Brabazon Ponsonby, ninth Earl of, Brit. administrator, b. Oct. 27, 1880; educated Harrow and Cambridge Univ. He was called to the Bar in 1903; Unionist M.P. for Cheltenham, 1910-13, and for Dover, 1913-20. In 1915 he served in Gallipoli with the Imperial Yeomanry, and, later, on the staff in France. He has been chairman and director of many concerns, notably De Beers Consolidated Mines, and the Underground Electric Railway Company of London. In 1931 he was appointed governor-general of Canada, and remained in this office until 1935. He was president of the Council of Foreign Bondholders in 1936, and chairman of the League Loans Committee in 1937. Privy councillor, 1931; G.C.M.G., 1931. The earldom of Bessborough in the Irish peerage dates from 1739; included in peerage of the United Kingdom in 1937.

Bessbrook, mrkt. tn. of Armagh, N. Ireland. Main industry, linen weaving and bleaching. Pop. 3000.

Bességes, tn. in the dept. of Gard,

France. Has coal mines and iron works. Pop. 7000.

Bessel, Friedrich Wilhelm (1784-1846), Ger. astronomer, b. at Minden on July 22. His investigations on Halley's comet led to recognition by H. W. M. Olbers (q.v.), who pub. his results. Following investigation the 1807 comet, he was installed by the king of Prussia as director of a new observatory at Königsberg. Here he stayed from 1813 till his death. He tabulated a catalogue of 3222 stars, and pub. it under the title *Fundamenta Astronomiæ*, 1818. Among his secondary achievements was the improved heliometer. His most important astronomical work is *Astronomische Untersuchungen*, 1841.

Bessels, Emil (1847-88), Ger. scientist and Arctic explorer, b. at Heidelberg, and studied natural science and medicine there and at Jena. His first polar journey was made in 1869, and enabled him to demonstrate the presence of the Gulf Stream E. of Spitzbergen. In 1871 the U.S.A. Gov. appointed him chief of the scientific dept. to the expedition under C. F. Hall in the *Polaris*. The vessel was wrecked and all B's. collections lost in 1873. He pub. an account of the expedition in 1876, and also *Die Americanische Nordpolarexpedition*, 1878.

Bessel's Functions, in mathematics, indicate certain relationships between two variables. F. W. Bessel (q.v.) introduced them in 1817 in investigating mathematical relationships in connection with planetary orbits. Later they have been employed in calculations concerned with the vibrations of a stretched membrane, thus contributing to the theory of sound; and in calculations connected with almost every branch of mathematical physics. Bessel's function of order m is indicated by the symbol $J_m(\rho)$, and satisfies the differential equation:

$$\frac{d^2\mu}{d\rho^2} + \frac{1}{\rho} \frac{d\mu}{d\rho} + \left(1 - \frac{m^2}{\rho^2}\right)\mu = 0.$$

See A. Gray and G. B. Matthews, *Treatise on Bessel's Functions and Applied Physics* (second ed.), 1922.

Bessemer, tn. of Jefferson co., Alabama, U.S.A., 16 m. S.W. of Birmingham. It has blast furnaces, rolling mills, foundries, machine shops, etc. Pop. 22,800.

Bessemer, Sir Henry (1813-98), Eng. engineer, b. at Charlton, Herts. He was the author of many inventions, particularly the special process of steel manuf. called the Bessemer process (q.v.). B. profited to the extent of over a million pounds by his discovery. Among his minor inventions were gold paint and a movable die for embossed stamps.

Bessemer Process, process for freeing wrought iron and low carbon steel from mechanically entangled clinder. It was first introduced in 1865 by Henry Bessemer (q.v.). By its cheapness and effectiveness, it displaced other methods, and is still widely used in Britain, the U.S.A., and other countries, especially for making rails, ship plates, boiler plates, etc., though other processes, such as the Siemens-Martin process, have come into

competition with it. The principle of the B. P. is briefly as follows. Molten pig-iron is converted into steel by having a large number of fine streams of air forced through it, causing the oxidation of its impurities, such as carbon, silicon, and often its phosphorus and sulphur. The intense heat thus generated, without the use of any other fuel, is sufficient not only to melt the iron and keep it in a molten state, but to raise its temp. to above the melting point of steel, that is, to 1500° C. The B. converter, in which this process is carried on, is an immense retort, made of boiler plates, and lined with some refractory material, such as dolomite, firebrick, or ganister. It is suspended aloft, and mounted on axes at or near its centre of gravity. It is turned on trunnions, through the right one of which the blast is carried to the gooseneck, which delivers it to the tuyères at the bottom. There are two varieties of converters. The original one is undephosphorising, because it is lined with refractory material, such as siliceous acid. The dephosphorising or Thomas Gilchrist process is the name applied when the converter is lined with basic materials. It was patented in 1878, but it is only a modification of the B. P. For further details as to the proportions of carbon, silicon, sulphur, phosphorus, manganese, and copper in the different varieties of B. steel, and the character of the spectrum of the flames, etc., see the article on STEEL.

Bessenov, Peter Alexievitch (1828-98), Russian philologist, b. at Moscow; became prof. of Slavonic literature at the univ. of Cracow in 1879. He pub. a large number of valuable works dealing with Bulgarian and Servian language and literature, and also made critical collections of the popular songs and folklore of the Servian, Bulgarian, and Russian peoples.

Bessus (d. 328 B.C.), satrap of Bactria under Darius III. In 331 B.C., after the battle of Gaugamela, he captured Darius, and, on being pursued by Alexander, murdered him. He was betrayed to Alexander and put to death by him.

Best, George (d. 1584?), Eng. navigator, who accompanied Martin Frobisher in 1576, 1577, and 1578 on his 3 voyages to discover the N.W. Passage. B. pub. an account of these journeys under the title, *A True Discourse of the late Voyages of Discoverie for the Finding of a Passage to Cathaya by the North-west, under the conduct of Martin Frobisher, Generall*, 1578. The work was trans. into Fr., Lat., and It. Copies of the *True Discourse* are rare; it was included in Hakluyt's *Voyages*, vol. iii. (1600). It is probable that B. was killed in a duel by Oliver St. John, Viscount Grandison, about 1584.

Best (afterwards **Beste**), **Henry Digby** (1768-1836), Eng. writer, b. at Lincoln and educated at the grammar school there. In 1791 he took holy orders, but later was received into the Rom. Catholic Church. In 1818 he left England for a time and lived in France and Italy. His works include: *Four Years in France . . . preceded by some Account of the Conversion of the Author to the Catholic Faith*, 1826;

The Christian Religion briefly defended against the Philosophers and Republicans of France, 1793; *Italy as it is*, 1828.

Best, Thomas (c. 1570-1638), Eng. naval officer, who went to sea about 1583. In 1612, while in command of the *Red Dragon*, defeated the Portuguese at Surat, and his victory estab. Eng. trading rights in India as equal to those of the Portuguese. In 1623 B. headed an expedition against the Dutch, who had blockaded a privateer at Aberdeen and commanded the *Vanguard* in the unfortunate expedition to Rhé, 1627.

Best, William Thomas (1826-97), Eng. organist, b. at Carlisle. He was appointed organist of the Liverpool Philharmonic Society in 1849, and of St. George's Hall, Liverpool, 1854. He was himself a composer, and arranged pieces for the organ. His publications are: *The Modern School for the Organ*, 1853, and *The Art of Organ-Playing*, 1870.

Bestiary (Fr.), name given to the natural hist. books which were popular during the Middle Ages. They set out to describe all known animals, both living and fabulous. Part of the description was usually versified, and many illustrations illuminated the works. In addition to their zoological value, which was small, they included moral lessons and entertaining stories in allegorical form. All the varying qualities of good and evil in the heart of man were personified by some creature or other of the beast world. On churches and other buildings of the Middle Ages there are many weird and fantastically conceived creatures sculptured. It is believed that these were derived from the current Bs. The famous *Physiologus* of the Gks. was the source whence the earliest Lat. Bs. were derived, but the Gk. text of *Physiologus* exists only in late MSS. and must be corrected from the translations. This *Physiologus* contained about 50 allegories. Old Syriac, Armenian, Ethiopic, Arabic, Icelandic, and numerous Lat. versions of it were issued. Earlier than the eleventh century a Ger. version was made. Philippe de Thaun and Guillaume, a priest of Normandy, made a Fr. version in the twelfth century. Richard de Fournival's *Bestiaire d'amour* is a satire upon the earlier works. Most of the information now obtainable is found in the following works: *S. Epiphanius ad Physiologum*, ed. Ponce de Leon, Rome, 1857; *S. Eustathii in Hexameron Commentarius*, ed. Allatius, Lyons, 1629; *Physiologus Syrus*, ed. Tycheon, Rostock, 1795; *Classici Auctores*, ed. Mal. vol. vii., Rome, 1835; G. Herder, in *Archiv für Kunde Österreich, Geschichtsquellen*, Vienna, 1850; Cahier and Martin, *Mélanges d'archéologie etc.*, Paris, 1851; Cahier, *Nouveaux Mélanges*, 1874; and works by Cardinal Pitra, Maetzner, J. Victor Carus, J. P. N. Land (*Anecdota Syriaca*, Leyden, 1874), Möbius, and Hommel.

Bestushev, Alexander (1797-1837), Russian author. A captain in the army, he was exiled to Yakutsk for conspiracy in 1825, but entered the army of the Caucasus in 1829. Most of his novels deal

with military life in the wild dists. of the Caucasus. They include *Mullah Nur* and *Ammal Beg*, and sev. of them have been trans. into Ger. His collected works appeared in 1839 under the title of *Martinski's Tales*.

Beta, second letter of Gk. alphabet. See ALPHABET, and B.

Betaine (Lat. *beta*, beet), chemical formula $C_5H_{11}NO_2$, called also trimethylglycine B., occurs as a natural alkaloid in beetroot, in mangel wurzel, in the leading branches of *Lycium barbarum*, and in putrefying flesh. It has the constitution trimethylglycine, and can be obtained by the oxidation of choline hydrochloride. Choline occurs in the bile and brain of animals, and also in the white of eggs. B. can be obtained as a hydrochloride synthetically by heating trimethylamine, $(CH_3)_3N$, with monochloroacetic acid, $CH_2Cl.CO.OH$. It crystallises from alcohol in shining deliquescent needles containing a molecule of water. It is neutral, has a sweet taste, and is decomposed by boiling alkalis or baryta. It may also be prepared by boiling diluted molasses with baryta, and, in the later stages of the process, removing the barium from the filtration by H_2SO_4 , the B. hyochloride crystallising in evaporation.

Beta (B) Orionis, see RIGEL.

Betanzos, tn. of Spain. It is situated to the S.E. of Corunna about 10 m. Its pop. is 9000. Anciently it was called *Brigantium Flavium*.

Beta Particles, electrons, or negatively charged particles, of very small mass. Emitted at high speed during radio-active changes. They are lighter and more penetrating than alpha particles (q.v.), and their velocity approximates to that of light.

Beta Persei, see ALGOL.

Betatron, high potential induction electron accelerator, in which electrons are introduced from a hot cathode injector into a vacuum chamber. Acceleration of the electron beam is accomplished by the time-changing flux. Confinement of the beam to repetitive paths to permit extended acceleration is achieved through interaction of the electron velocity with the appropriately space-shaped magnetic field of the accelerating unit. The accelerated electron beam travelling at speeds up to 185,000 m. per second strikes a target and generates x-radiation, which passes through the walls of the chamber. The B. is used to transmute elements, to generate the most powerful x-rays known, and investigate cosmic ray effects.

Beteiguse, or Alpha Orionis, a bright star situated in the E. shoulder of the constellation of Orion. It is a long-period variable of about 196 days during which it declines in magnitude from 1.0 to 1.4. B. is the brightest star in Secchi's third type, i.e. it is reddish in colour and of a comparatively low temp. The spectroscopic reveals the presence of sodium, magnesium, and iron in its composition, but no hydrogen. B. has a small parallax, 0.02", which means that it is very remote, its distance being 160 light-years. Its brilliancy exceeds that of the sun many

hundred times, and it is estimated that it is receding from the solar system at the rate of 15 m. a second.

Betel-nut Palm (*Areca catechu*), tree indigenous to Malaysia, but cultivated also in S. India, Ceylon, Siam, and the Philippines. It grows about 50 ft. high, branchless, but bearing a crown of large fronds. The fruit, nearly the size of a hen's egg, contains the nut used by Asiatics for mastication. Gathered and husked before they are fully ripe, the nuts are then boiled, sliced, and sun-dried. Each piece for chewing is wrapped in a leaf of the betel pepper-vine, with some lime and often an aromatic flavouring. The betel reddens the mouth and blackens the teeth, but preserves them.

Beth, see BERT.

Betham-Edwards, Matilda (1836-1919), Eng. poet and novelist, the daughter of Edward Edwards, and of his wife Barbara, *nee* Betham. She became Officier de l'Instruction Publique de France, 1891. In addition to her vols. of poems, she wrote a number of books on France and Fr. life, notably *Anglo-French Reminiscences* (1899), *Home Life in France* (1905), and *Twentieth-Century France* (1917).

Bethania, post vil. of Forsyth co., N. Carolina, U.S.A. It is situated 8 m. from Salem.

Bethany: (1) Vil. 2 m. E.S.E. of Jerusalem. It is called El Azariyeh among the Arab inhab. of Palestine, for it was the residence of Lazarus and his sisters. The only object of interest is the supposed tomb of Lazarus. Of the ecclesiastic buildings erected about the fourth century little or no trace is existing. It is situated on the Mt. of Olives at a height of 2208 ft. above sea level. Pop. 200. (2) The same name, B., is given to 3 tns., or rather mission station, in S. Africa. They are situated in Great Namaqualand, Orange Free State, and Transvaal respectively.

Bethel, a pile of ruins called to-day Beitin, and situated about 11 m. N. of Jerusalem. The name trans. is 'house of God.' Scriptural mention of it makes it the scene of Jacob's dream. Formerly the place was known as Luz. Abraham stayed here, while afterwards the ark of the covenant was deposited in its precincts. Still later it became a royal residence and a centre of heathenish adoration. Pop. 500.

Bethell, Richard, see WESTBURY, BARON.

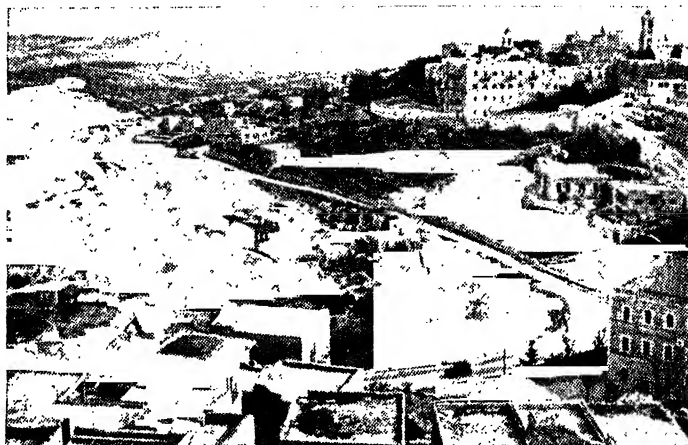
Bethesda: (1) A public bath of Jerusalem. Here Christ's healing of the impotent man occurred. Birkat Israel, situated in Jerusalem, has been identified with it since the year 1102. It is in that part of the city near the gate of St. Stephen and Omar's Temple. Other declarations of its site are those of Condor, who claims it to be identical with a spring called Gihon and En Rogel in the Kedron valley; and Sobiek who, in 1889, made a discovery of the remains of the pool's construction near St. Anne's Church. (2) A small tn. of Carnarvonshire, Wales, from whose Nonconformist chapel it derives its name, and situated about 4 m. from Bangor to the S.E. The Penrhyn slate

quarries, adjacent to the tn., employ most of its inhab. Pop. 4500.

Beth-horon, Upper and Lower (modern Beit 'Ur et Teahia and Beit 'Ur el Foka), two vils. of Palestine, 10 m. N.W. of Jerusalem, on frontier between Benjamin and Ephraim. Joshua defeated the Amorites in the pass between the two (see Joshua x. 1-11), and Judas Maccabeus defeated the Syrians here in 166 B.C.

Bethlehem: (1) The modern Beit Lahm, situated 5½ m. S. of Jerusalem, 2350 ft. above sea level. It is reached by a main road which passes, after 4 m., the Tomb of Rachel. B. stands on a high, narrow

ridge, restored by Justinian in the sixth century. The roof was repaired in the fifteenth century with lead sent by Edward IV. of England. The church is now shared by sev. communities. The grotto of the Nativity lies beneath the choir; on the E. side a silver star traditionally indicates the spot where Christ was b. Around it is the inscription 'Hic de Virgine Maria Jesus Christus natus est.' In 1935, as the church was in need of repair, the Colonial Office appointed a Brit. architect to report on its state as well as on that of the church of the Holy Sepulchre. A few m. to the S. of B. are the reservoirs known



BETHLEHEM

Terraces and the Church of the Nativity.

ridge, and is a typical old Jewish tn. of biblical times. Its structure explains many descriptive phrases of it in the Bible: thus external stairways still lead to the flat roofs, while the roofs are often conjoined so as, in effect, to facilitate flight from one dwelling to another. It has no natural springs, but wheat, olives, etc., grow in its neighbourhood, and its wine is excellent. It is famous as the home of David, the scene of Ruth's story, and above all as the bp. of Jesus. Christian pilgrimages thither began before A.D. 132. In A.D. 326 Constantine built a basilica, over which in 1099 the crusaders raised their standard and Baldwin I was crowned king of Jerusalem within it. In 1244 the Khwarizmians, who had conquered both Christians and Muslims, devastated it and in 1489 it was again destroyed and became a ruin. It now consists of 2000 houses with a pop. chiefly Christian of about 7000. The church of the Nativity is the oldest Christian church still in use, being the original basilica built by Constantine in 330, and partly

as the Pools of Solomon, which have now been brought into use in conjunction with other auct. sources of supply at Arrub. Adjoining the pools is a khan for Moslem pilgrims attributed to Sultan Soleiman, and known as the Qala't al-Burak. During the First World War B. was taken by the Brit. on Nov. 22, 1917.

Publications dealing with the hist., archæology, and architecture of Bethlehem: *Les Églises de la Terre sainte*, by Count Melchior de Vogüé, 1860, the classic architectural and historical description; *The Church of the Nativity at Bethlehem*, by W. Harvey, W. R. Lethaby, and others, 1910, an illustrated architectural and descriptive survey; *Bethlehem: le sanctuaire de la Nativité*, by Vincent and Abel, 1914, a fully documented historical and archæological study, written prior to recent important discoveries, now supplemented by articles in the *Revue biblique*, 1936, 1937; *Structural Survey of the Church of the Nativity, Bethlehem*, by William Harvey, 1935, a fully illustrated architectural survey of the present

condition of the church, including a record of recent archaeological discoveries; *Excavation in the Atrium of the Church of the Nativity, Bethlehem*, by R. W. Hamilton; *Basilica of the Nativity, Discovery of the Remains of an Earlier Church*, by E. T. Richmond.

(2) A post-bor. in the co. of Northampton, Pennsylvania, U.S.A. It is situated on the R. Lehigh, and is connected by rail with Philadelphia, 55 m. distant. The Moravians founded the tn., whose inhab. are still mostly of that sect. Silk, paint, and flour are its chief products. It is joined to South B. by two bridges across the Lehigh, and to West B. by Monocacy Creek. Total pop. 70,000. South B. is a centre of the steel and iron industry. Here are located some of the chief works of the B. Steel Corporation. In Nov. 1915 a fire attributed to Ger. agents caused a loss of material worth £250,000. South B. is the seat of the important Lehigh Univ., a Moravian theological seminary, and a woman's college.

(3) Tn. of Grafton co., New Hampshire, U.S.A., on Ammonoosuc R., 75 m. N.W. of Concord. A favourite summer resort of the White Mt. dist., having an elevation of 1460 ft. Pop. (resident) 872.

(4) Tn. of Orange Free State, S. Africa, 125 m. N.E. of Bloemfontein, in an agric. region, with an excellent climate. White pop. 6300.

Bethlehem Hospital, see BEDLAM.

Bethlehem Steel Corporation, the largest steel company in the world; incorporated under perpetual charter in N. Jersey in 1904, since when it has acquired control of extensive iron, coal, shipbuilding, and other interests. The corporation has steel and manufacturing plants at Bethlehem, Steelton, Lebanon, Johnston, and Coatesville in Lackawanna, Wilmington, Seattle, and San Francisco. Its chief products are pig-iron, ferro-manganese, spiegeleisen, iron and steel bars, slabs, guns, ammunition, bridges, viaducts, etc. Its shipbuilding and repair plants are at Quincy, Sparrow's Point, Baltimore, Alameda, San Francisco, San Pedro, and Boston.

Bethlehemites, the name of various societies following: (1) Order of monks of England who lived in the thirteenth century, and who founded a monastery at Cambridge, 1257. (2) Military order founded by Pope Pius II. to prevent an attack from the Turks in 1459. (3) Society of Guatemala, founded in 1659 and patronised by Pope Innocent XI. in 1687. Bethlehem Church in Prague gave the name also to its followers who were led by John Huss.

Bethlen, Stephan, Graf (Count) Bethlen von, Prime Minister of Hungary, b. Oct. 8, 1874, at Kornešty; son of Count Stephan Bethlen, of an old Transylvanian family. He was educated at Vienna and at Budapest Univ., where he studied law. He also took an agric. course at Magyaróvár; he then travelled, visiting America. In 1901 he entered the Hungarian parliament as a Liberal, but refused Count Tisza's offer of a place in the gov. Francis-Joseph made him a privy coun-

cillor. After the First World War, when Bela Kun (*q.v.*) headed the Communist revolution, Count B. was a leader of the counter-revolution. When this succeeded, the country was declared to be still a monarchy with the succession in suspense. In 1921 B., at the request of the Regent Nikolaus Horthy, became Prime Minister. He settled the W. frontier amicably with Austria, and in 1923 he succeeded in obtaining suspension of the reparations order against Hungary, and a loan from the League of Nations. In 1927 he signed a treaty with Italy, whose regime had much in common with his own. He was Prime Minister for 10 years from 1931, and, after that, leader of the opposition. In May 1939 he retired from political life, saying in his valedictory letter that he was 'opposed to Bolshevism, which seemed to be the trend of politics in Hungary.'

Bethlen-Gabor (1580-1629), member of an anc. Hungarian Protestant family. He was the chosen prince on the death of Gabriel Báthory in 1613. In 1619 he led the Bohemians against the Austrians in defending their rights. His victories led to his proclamation as king of Hungary in 1621. Varying fortunes, which finally resulted favourably to him, ended in a peace with Ferdinand II. of Austria. Gabor relinquished the title of king of Hungary, though he gained large acquisition of ter. and the title of prince of the Empire. The breaking by Ferdinand of the treaty saw Gabor's invasion with 60,000 men and consequent renewal of the violated conditions. In 1629 he *d.* Besides the high standard of military skill attained, he aided and endowed science and art.

Bethmann-Hollweg, Dr. Theobald Theodore Friedrich Alfred von (1856-1921), Ger. Imperial Chancellor, b. at Hohenfinow by Eberswalde. The Bethmanns were a banking family into which one Johann Jakob Hollweg had married—he was Theobald B.-H.'s great-grandfather. Johann Jakob's son, Moritz August von B.-H. (1795-1877), Theobald's grandfather, was Prussian minister of public instruction 1858-62, ennobled by Frederick William IV. in 1840. Theobald B.-H. studied law from 1875 to 1879, at Strasburg, Leipzig, and Berlin; and then occupied various posts in the civil service. He was assessor in Potsdam, 1885; Landrat (sheriff) of Ober-Barnim, 1886; member of the Reichstag for a brief period in 1890; president's counsellor, Potsdam, 1896; president of the local board at Bromberg, 1899; three months later, president of Brandenburg Province; acting privy counsellor, Jan. 1901; Prussian minister of the interior as well as vice-chancellor of the Empire, 1905; vice-president of the Prussian Ministry of State, and imperial secretary of state for the interior, 1907. On July 14, 1909, on the resignation of von Bülow (who was opposed to the Reichstag's scheme of indirect taxation), B.-H., although he had little experience of foreign affairs, was appointed chancellor. He became known as the upright chancellor. His mild Bill for the amendment of the Prussian

constitution was rejected in 1911. In that year he was instrumental in giving Alsace-Lorraine a more popular constitution, and came to an understanding with Russia as to the Near East. He was responsible for sending the warship *Panther* to Agadir (q.v.). The elections of 1912 gave the Socialists one-third of the votes in the Reichstag, and the militarism of the other parties was intensified. In 1913 the Zabern (q.v.) incident undid whatever mollifying influence had been exercised by the new constitution of Alsace-Lorraine. In 1914, from the date of the Sarajevo murder, June 28, till Aug. 1, the Foreign Affairs Committee of the Federal Council did not assemble. When it met on the latter date, B.-H., who presided, said: "When Austria-Hungary informed us that she would have to take action, we replied: 'We do not pretend to be able to judge what you ought to do; that is not our business. But it goes without saying that if the *casus foederis* should arise, we shall stand loyally by you.'" On Aug. 4 the Brit. ambas., Sir Edward Goschen, had his last interview with B.-H., who said: "Just for a word, 'neutrality'—a word that in wartime has so often been disregarded—just for a scrap of paper, Great Britain is going to make war on a kindred nation, which desires nothing better than to be friends with her." Count Bernstorff, the ambas. to U.S.A., while trying in 1916 to bring about peace through the mediation of President Wilson, strongly objected to the beginning of a submarine war against all vessels trading with Britain; but the military chiefs insisted, and on Sept. 25, 1916, B.-H. telegraphed to Bernstorff supporting them. The 'unlimited' warfare began Feb. 1, 1917. It became clear, however, that B.-H. was neither enthusiastic nor sanguine. Hindenburg and Ludendorff came to Berlin to negotiate with leaders of the various parties; and B.-H., recognising that he was pushed aside, resigned July 14, 1917, and was succeeded by Georg Michaelis. On June 25, 1919, he offered himself for trial by the victorious powers; in Oct.-Nov. 1919 he was examined before a Reichstag committee of inquiry. He d. at Hohenfinow Jan. 2. His *Betrachtungen zum Weltkrieg* were pub. between 1919 and 1921.

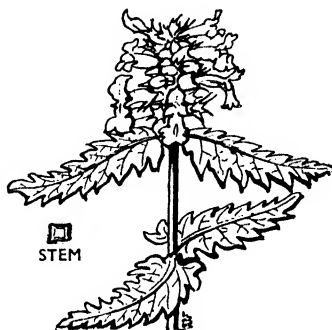
Bethnal Green, suburb in the E. of London, and a parl. bor. since 1885. A large portion of its pop. consisted formerly of silk-weavers from the Huguenot settlement, Spitalfields. In 1872 Queen Victoria opened a branch of the S. Kensington Museum here. Now the prin. occupations are matchbox-making, boot-making, and cabinet-making. Pop. 108,000.

Bethphage, associated with Bethany in the N.T., was a vil. near the Mt. of Olives, on the road from Jerusalem to Jericho.

Bethsaida, vil. on the W. shore of Lake Galilee. It was the bp. of Peter, Andrew, and Philip. Nothing now remains save a pile of grass-covered ruins. Another B. is situated at the E. extremity of the lake. It was named Julius by Philip the Tetrarch, after a daughter of Emperor Augustus.

Bethsan, see BEISAN.

Beth-shemesh: (1) Anct. city of Palestine, probably the modern Ain Shems, a vil. 15 m. S.W. of Jerusalem. Frequently mentioned in the O.T. as a city of N. Judah, between Kirjath-jearim and Timnah, originally a Levite city and later the chief city of Dan. Jehoash, king of Israel, captured Amaziah, king of Judah, here. See Joshua xxi. 16, and 2 Kings xiv. 11. (2) City of Naphtali, Upper Galilee. See Joshua xix. 38. (3) City of Issachar. See Joshua xix. 22. (4) Temple of On, Lower Egypt. See Jer. xliii. 13.



BETONY

Bethulie, tn. of Orange Free State, S. Africa, near Orange R., 39 m. S.W. of Bloemfontein. There are coal mines near. Pop. 2000.

Béthune, tn. in the dept. of Pas-de-Calais, France, 25 m. N.W. of Arras. It is the cap. of an arron., and the centre and market of the neighbouring coal mines. Its industries include oil and sugar refineries. The tn. was founded in the eleventh century, and did not come finally under Fr. rule until ceded to Louis XIV. by the treaty of Nimeguen (1678). The tn. suffered severely from bombardment in the First World War, but this did not prevent subsequent expansion. In the Second World War the B. area was heavily raided by the R.A.F. on Sept. 17, 1941. The tn. possesses a magnificent belfry of the fourteenth-sixteenth centuries and the church of Saint Vaast partly of the thirteenth century. Pop. 20,000.

Bethune, Cardinal David, see BEATON.

Bethune, Edward Cecil (1855-1930), Brit. soldier. He entered the R.A. in 1874, and a Highland regiment in 1875. He attained the rank of major-general in 1908. He served in the Afghan war, 1878-80, and in the Boer wars of 1881 and 1899-1902; for the last-named war in S. Africa he raised and commanded Bethune's horse. After that war he commanded the S.E. Sub-Dist., Cape Colony. Promoted to lieutenant-general in 1913. Was director-general of the Territorial Force, 1912-17. Retired 1920.

Bethune, James, see BEATON.

Bethune, Maximilien de, *see* SULLY, DUC DE.

Bethylus, in entomology, genus of small hymenopterous insects of the family Proctotrypidæ. The species are four-winged flies remarkable for their large depressed heads, and somewhat resemble ants in appearance. They are found chiefly in dry and sandy situations.

Bethylus, in ornithology, genus estab. by Cuvier and placed among the Laniidæ, butcher-birds or shrikes (*q.v.*). The species described by him is a native of Guiana and Brazil, and is particoloured, black and white, like the common magpie.

Betony (*Stachys betonica*), plant belonging to the Labiatae order. It is found in Great Britain in damp shady places, in hedgerows, woods, etc. The leaves are long, with toothed edges, and the blossoms, which appear in July and Aug., are of a purple colour. It was formerly regarded as a medicinal herb. It can be used to extract a kind of yellow dye.

Betrothal (A.-S. *treowth*, truth), term signifying pledging oneself to marry, *i.e.* giving one's troth. It was anciently a more formal ceremony than it is to-day, having most of the binding force of a marriage. Rom. law (*sponsalia*) imposed the duty on betrothed persons to become husband and wife in a reasonable time, except where death intervened. The custom was practically abolished in the Christian Church by the Council of Trent, because it so frequently led to clandestine marriages; but subsequently it became common again on the Continent. Since a betrothal is a legal contract, it is valid only between parties whose capacity is recognised by law, as, for instance, the persons must be of age. Betrothals induce a strict obligation to marry, and should either party eventually refuse, the other may obtain damages in an action for breach of promise. Betrothal as a term of art in Eng. law has fallen into disuse, it being rather the mere promise to marry than any formal betrothal that gives rise to the legal obligation.

Betsileo, S. part of the central plateau of Madagascar, inhabited by the Betsileos, numbering 470,000. Cap. Fianarantsoa.

Betterment, term used to describe the additional value a tenant has caused his landlord's land to possess. *See also* FIXTURES; LANDLORD AND TENANT.

Betterton, Thomas (1635-1710), the leading Eng. actor of his time, b. in Westminster, son of an under-cook in Charles I.'s household. Apprenticed to Rhodes, a bookseller of Charing Cross, who had been wardrobe-keeper to the theatre in Blackfriars. In 1659 Rhodes obtained a licence to form a company of players at the Cockpit, Drury Lane, and here B. made his first appearance on the stage. In 1662 Sir Wm. Davenant, patentee of the new theatre in Lincoln's Inn Fields, engaged B. and all Rhodes's company to play in his *Siege of Rhodes*. B. became so great a favourite of the king that he was sent to France to make improvements in the Fr. theatres. Cibber says that it was after B.'s return that shifting scenes first replaced tapestry on the Eng. stage.

In 1670 B. married Mrs. Sanderson, a capable actress of the same company. Later B. built a new playhouse in Lincoln's Inn Fields, which opened in 1695 with Congreve's *Love for Love*, B. taking the part of Valentine. But the venture was not financially very successful, and B., with impaired health, decided to leave the stage. His performance of Hamlet after this time, however, was especially noteworthy. In 1710 he made his last appearance in his celebrated part of Melantius in *The Maid's Tragedy*. On his death in the same year his remains were interred with much ceremony in the cloisters of Westminster. He wrote sev. dramatic works which had a vogue in his day. *See An Apology for the Life of Mr. Colley Cibber, Comedian*, 1740, 1879; R. W. Lowe, *Thomas Betterton*, 1891.

Bettia, tn. in Bihar, India. It consists of 10 different dists. Indigo is principally cultivated.

Bettinelli, Saverio (1718-1808), It. writer. After being educated at a Jesuit college, he became a member of that society. On the suppression of his order in 1773, he wandered from city to city. His chief work is the *Risorgimento*, wherein he traces the progress of science and art in his country, whilst his tragedy of *Xerxes* added considerably to his renown. But he is equally well known for his attack on Dante in *Lettere Dieci di Virgilio agli Arcadi*, 1756.

Betting, the act of staking money on the result of some future event, usually of a sporting nature, but not necessarily so. The word is supposed to be derived from the Old Fr. *abeter*, to instigate. The origin of the custom is not exactly known, but it dates back to the very earliest days, especially in E. countries. By far the largest part of B. in England takes place over horse-racing, and the men who make a profession of taking bets are known as bookmakers. Up to the early part of the nineteenth century none of these existed, as such, but the first man to take bets in a really scientific and business-like manner was William Ogden in 1793, who can be called the first proper bookmaker. B. is illegal except at properly authorised race meetings, and then it must be in Tattersall's Ring. The B. is of two kinds: post B., when the wagering begins when the numbers of the horses are hoisted on to the board just before the race, and ante-post B., when the wagering takes place weeks before the event. Bets on all big races, such as the Derby, the Oaks, the St. Leger, the Cambridgeshire, or the Cesarewitch, often take place nearly a year previous to the race meeting. Bets are quoted in most newspapers, and as the public take them up so the prices are regulated. The theory of B. is simple, but in practice it is more complicated. The bookmaker will make a book for a certain amount, say £50, £100, or £1000, and his endeavour is to lay an equal amount of his book against every horse in the race. The odds, of course, change with the current quotations of each horse. (For further details consult Tattersall's *Rules on Betting* and Rowntree's

Betting and Gambling.) Bookmakers who wish to carry on their business otherwise than at race meetings are styled 'commission agents,' and profess only to take money on behalf of others. The Betting Acts of 1853 and 1874 were made to prevent bookmakers having too much power, while the Gaming Act was designed to check the evils attendant on this custom. The Betting Acts above mentioned enforce that 'no house, office, room, or other place' shall be resorted to for the purpose of B. The word 'place' has been held to mean even an umbrella or stool belonging to a bookmaker at a race meeting who is outside Tattersall's ring. B. debts cannot be recovered in a court of law. Welshing is the term given to the practice on the part of a dishonest bookmaker of disappearing with the stake-money before a race. The laws on street B. are severe, especially upon those making books with persons under the age of 16. For the first offence any one taking bets in a public place is fined £10; for the second offence, £20; and for the third offence, £50 or six months, and so on, according to the number of convictions. Among some of the famous bets that have taken place may be mentioned that of Lord George Bentinck, who won £20,000 when Crucifix won the Oaks in 1840, and 3 years later the same nobleman stood to win £150,000 if his horse Gaper had won the Derby; the horse lost, but Lord George won £30,000 on another horse. John Gully and Ridsdale won £100,000 over the Derby and the St. Leger in 1832, and Sir Joseph Hawley won £80,000 when Beadsman won the former race in 1858. Lord Glasgow once laid £90,000 to £30,000 with Lord George Bentinck. Capt. Machell gained over £60,000 when Hermit won the Derby, while over the same race the notorious plunger, the Marquess of Hastings, lost the enormous sum of £103,000. The totalisator system of B. is now in operation on many race-courses in England. This system was first used in France, the apparatus being known as the *pari mutuel*. It is a large frame with a pigeon-hole for each horse, into which the stakes are placed; the better obtains a voucher for his money, and the numbers are exhibited after the race. The Fr. municipal authorities deduct a certain percentage from the stake-money, and another percentage is also set aside for the poor before the money is divided up amongst the winners. This system was introduced into France in 1865, and a few years later into England, where, however, it did not find favour, and was soon abolished and declared illegal as being a gaming machine. The difference between the 'tote' and the *pari mutuel* is that the former is operated automatically by electricity. Both the *pari mutuel* and totalisator systems again came into favour in Great Britain and were legalised by the Racecourse Betting Act, 1928. Such B. is controlled, under the Act, by a board of control. The system is also used in the dominions.

Wagers are a form of B. not usually associated with the race-course, but are a

hazard on any event, sporting or otherwise, sometimes on things of an absurd nature. Lotteries, still another method of B., take the form of taking tickets for small or large amounts on the chance of winning big sums of money. The earliest lottery properly estab. was one in Florence in 1530, and in 1571 a special official was appointed in Venice to supervise these affairs. From Italy the lottery passed into France and gradually spread over Europe. The first one known in England was at the end of the seventeenth century. Lotteries are now illegal in England, however, although they still flourish on the Continent, where they are sometimes run by the states, in fact Austria, Denmark, and Prussia have raised loans by this means. In America, as in England, they are now forbidden by law. The Betting and Lotteries Act, 1935, restricts betting by totalisator and bookmaker to 104 days on any racing track; regulates greyhound racing and authorises the establishment of totalisators on dog tracks; bans all lotteries, with the exception of certain small private ones organised by clubs and other institutions; prohibits the publication of lottery advertisements, 'matter descriptive' of the drawing of lotteries, and lists of prize-winners; and imposes penalties ranging from a fine of £50 to a fine of £750, or two months' imprisonment to a year's imprisonment. The publication of matter descriptive of the drawing or intended drawing of a lottery is only an offence if it is 'calculated to act as an inducement.' A justice of the peace, before issuing a search warrant, must be satisfied that premises are being used for the sale or distribution of lottery tickets. In connection with trafficking in lottery tickets, and, in particular, in Irish Sweepstake tickets, the gist of the offence is the sale and distribution of tickets in Great Britain. It is not an offence for an individual to send money to Dublin for tickets for himself; but if the individual were to sell the tickets to someone else, or to hand money on to another person for the purpose of purchase, that would be an offence under the Act. (See also LOTTERY.) The gaming-table is also a popular form of B.; this is now also illegal in England, though in 1820 it was licensed in London and was popular in the eighteenth century, but in the early part of last century the games of faro, basset, hazard, and roulette were prohibited. Gaming continued, however, to be in vogue at many of the health resorts on the Continent, but only quite small sums are allowed to be staked at one time, generally not exceeding 5 Swiss frs. Ostend has a large kursaal with many tables, and although officially abolished in France in 1838, gaming-tables for the small amounts alluded to above are still to be found at places like Dieppe and Boulogne. Baden-Baden, the famous watering-place, and Homburg, the Prussian spa, were at one time two of the most famous resorts in Europe of gamblers. Since the suppression of the gambling facilities of most of these places, Monaco is the only European state where gambling

on a large scale is lawful. See MONTE CARLO.

Betting Tax. This tax was imposed by the Conservative Gov., with Mr. Winston Churchill as chancellor of the exchequer, in the Finance Act of 1926. It provided that the following excise duties should be levied on and after Nov. 1, 1926: (a) On every bet made with a bookmaker a duty of 3½ per cent of the amount wagered, or in the case of a bet in respect of a horse race on a race-course 2 per cent of the amount wagered; (b) on a certificate to be taken out annually by the bookmaker a duty of £10; (c) on a certificate to be taken out annually by the bookmaker in respect of the entry for any betting premises kept or used by him a duty of £10. The Act declared that no part of this Act in so far as it related to betting should render lawful betting in any manner or place in which it had hitherto been unlawful. The above figures of 3½ per cent and 2 per cent were amended in 1928 to 2 per cent and 1 per cent. The tax was abolished by the Labour Gov. in 1930.

Bettws-y-coed, urban dist. of Carnarvonshire, Wales, situated 4 m. from Llanrwst and 16 from Llandudno. Its name signifies house of prayer (from O.E. *bede*-house) of the wood. Artists and tourists are attracted to the spot. Fishing for trout and salmon yields large results. Among its waterfalls the best known are Llugwy, Lledr, and Conwy. Pop. 1000.

Betty, William Henry West (1791-1874), Eng. actor; popularly known as the 'young Roscius.' He was b. at Shrewsbury, Shropshire, and first appeared on the stage at the age of 12 as Osman in *Zara* by Aaron Hill, which was Voltaire's *Zaïre* in Eng. Spontaneous success led to a journey to Dublin. While here he is said to have memorised the part of Hamlet in 3 hours. The House of Commons was adjourned by Pitt one night to allow members to attend a performance where he was appearing. He made his last appearance as a boy actor in 1808; was a fellow commoner at Christ's College, Cambridge, from 1809 to 1911; returned to the stage in 1812; retired in 1824 to enjoy the fortune he had amassed.

Betul, or Baitul: (1) Dist. of Central Provs., India. Mountainous, with large forests and some coal mines. Cap. Badnūr. Area 3826 sq. m.; pop. 400,000. (2) Tn. of above dist., 112 m. N.W. of Nagpur. Pop. 6000.

Betula, generic name of the birch, and gives its name to the natural order *Betulaceæ*. See BIRCH.

Betulaceæ, an order of dicotyledonous trees or shrubs found largely in N. lands. It comprises 6 genera, of which typical plants are the birch, alder, hornbeam, and hazel-nut.

Betuwe, dist. of the Netherlands, situated between the Waal R. and the Rhine R., in the prov. of Gelderland. It is very fertile.

Betwa, riv. in India, rising in Bhopal in Malun. It joins the Jumna after a course of 360 m. A canal 168 m. long is

fed by it for irrigation purposes in the Jalaun dist.

Betzdorf, tn. of Rhineland, Germany, 45 m. S.E. of Cologne. Has iron and machine works. Pop. 8600.

Beulé, Charles Ernest (1826-74), Fr. archaeologist and politician, b. at Saumur. He became prof. of archaeology at Athens, where he discovered the propylæa of the Acropolis. His publications were numerous and include: *L'Acropole d'Athènes*, 2 vols., 1854; *Études sur la Péloponnèse*, 1855; *Les Monnaies d'Athènes*, 1858; *Phidias, drame antique*, 1863; and *Histoire de l'art grec avant Périclès*, 1868. *Consult* Ideville, *Monsieur Beulé, souvenirs personnels*, 1874.

Beurnonville, Pierre de (1752-81), Fr. general under the republic, b. at Champignolle.

Beust, Friedrich Ferdinand von (1809-1886), Austrian count and statesman, b. at Dresden; descended from a distinguished and noble family who had been connected with the Mark of Brandenburg. Educated at Leipzig and Göttingen, he entered the public service of Saxony. In 1836 he became secretary to the legation at Berlin. His later appointments led him to London, Paris, and Munich. He was the champion of the minor Ger. states against Prussian hegemony; but his chief title to fame is that, as foreign minister to the Emperor Francis Joseph, he brought to a successful issue the negotiations for the *Ausgleich* between Austria and Hungary.

Beuthen, or Bytom, tn. of Silesia, on R. Oder 110 m. S.E. of Wrocław, centre of the metal-working and mining industries. The tn. dates from the sixteenth century, when it was part of Bohemia, the cap. of the duchy of B. It remained within the Ger. prov. of Silesia after the partition of Upper Silesia between Germany and Poland in 1921, but was incorporated in Poland in 1945 after the Second World War. Pop. 101,000.

Beuvry, tn. of Pas-de-Calais dept., France, 3 m. S.E. of Béthune; pop. (commune) 6000.

Beuzeville, tn. in the dept. of Eure, France, 7 m. S.E. from Honfleur. Pop. 2000.

Bevagna, tn. of Umbria, Italy, 18 m. S.E. of Perugia. Has a trade in wine. Pop. (tn.) 3800, (commune) 6400.

Beveland, North and South, two is. in the Scheldt estuary, Netherlands. They are of the Zeeland Is., of which group S. B. is the largest and most fertile. It has a pop. of 23,000. N. B. is a low marshy tract.

Beveren, tn. of Belgium, situated in E. Flanders. It became noted for the manuf. of point-lace. It contains a famous church. Its pop. is 13,000.

Beveridge, William (1637-1708), Bishop of St. Asaph, studied the classical and Semitic languages as sizar of St. John's College, Cambridge. In 1661, having obtained his M.A. degree, he was ordained deacon and priest. Before finally accepting his bishopric he refused that of Bath and Wells. Piety and devotion distinguished him through all his preferments. In 1824 9 vols. of his sermons and other

writings were pub. His *Private Thoughts upon Religion* was pub. in 1709.

Beveridge, William Henry, first Baron **Beveridge of Tuggal** (b. 1879), Eng. economist, b. at Rangpur, Bengal, son of Henry B. of the I.C.S.; educated at Charterhouse and Balliol College, Oxford; Stowell Civil Law Fellow of Univ. College, Oxford, 1902-9. He was leader-writer for the *Morning Post*, 1906-8; member of the Central Unemployed Body for London, 1905-8, and first chairman of Employment Exchanges Committee. He entered the Board of Trade in 1908, and was director of labour exchanges, 1909-16; then assistant secretary in charge of Employment Dept. He was director of



E.N.A.

LORD BEVERIDGE

London School of Economics and Political Science, 1919-37. He holds degree of D.Sc. (Econ.), London, 1930, and was a senator of London Univ., 1919-37, and again in 1944; vice-chancellor, 1926-28. From 1941 to 1943 he was president of the Royal Statistical Society. He has served as chairman of various social services committees, notably, since 1934, of the Unemployment Insurance Statutory Committee, and, during 1941-42, of the Inter-Departmental Committee on Social Insurance and Allied Services. This body was formed as a committee of experts, including the gov. actuary and representatives of many gov. depts., to undertake a survey of the existing national schemes of social insurance, including workmen's compensation, and to make recommendations. The outcome of these labours was the celebrated report made by B. as chairman, and signed by him alone. It

was pub. by the Stationery Office under the title of *Social Insurance and Allied Services* (Cmd. 6404 of 1942). Its main feature was a far-reaching scheme of social insurance against 'interruption and destruction of earning power and for special expenditure arising at birth, marriage, or death.' The plan was intended to cover the whole community, without upper income limit, and embodied 6 fundamental principles: namely, 'flat rate of subsistence benefit; flat rate of contribution; unification of administrative responsibilities; adequacy of benefit; comprehensiveness; and classification.' It provided for the conditions of unemployment and disability benefits, retirement pensions, training benefits, maternity grants, children's allowances, widows' allowances, and recommended a national health service organized under the health depts., while at the same time advocating the creation of a Ministry of Social Security to unify the administrative work of the whole scheme. The report, which was the basis of subsequent legislation, created a widespread interest at the time of its publication, and summaries of it were broadcast to the world. Apart from its merits, it was held to symbolize the stability and confidence of Great Britain in that, during the course of a world war, in which its existence was at stake, the country could nevertheless concern itself with plans for the betterment of social conditions. K.C.B., 1919; raised to the peerage in 1946. Other works pub. by B. are as follows: *Unemployment: a Problem of Industry*, 1909 (new ed., 1930); *Insurance for All*, 1924; *British Food Control*, 1929; *Causes and Cures of Unemployment*, 1931; *Planning under Socialism*, 1936; a pamphlet, *The Unemployment Insurance Statutory Committee*, 1937; *Full Employment in a Free Society*, 1944; and a book about his father and mother, *India Called Them*, 1943.

Beverland, Adrian (c. 1654-post 1712), Dutch scholar, b. at Middelburg, Zeeland. His pamphlet, *Peccatum Originale*, was produced in 1678, and was burned publicly, while its author suffered imprisonment. His *De Stolatæ Virginitatis Jure*, pub. in 1680, caused a still greater storm of obloquy. Later he became mentally deranged, and d. not long afterwards.

Beverley, tn. in the E. Riding of Yorkshire, Eng. It is connected with the R. Hull by a canal. It is 8 m. N.N.W. of Hull city. Corn and coal are its chief articles of trade, while tanning and the manuf. of agric. tools are the chief industries. The tn. possesses a magnificent Gothic minster in the collegiate church of St. John. For architectural beauty it compares with York Minster itself. There is also a grammar school whose foundation is of such antiquity that its exact date is unknown. Pop. 14,000.

Beverley, St. John of (d. 721), Eng. ecclesiastic, b. at Harpham in Yorkshire, was for 33 years archbishop of York, and was tutor to the Venerable Bede. He founded a college at Beverley for secular priests. After his death he was canonised, and William the Conqueror spared the tn.

of Beverley when he ravaged the rest of Yorkshire. Among B.'s works are *Pro Luca Exponendo*, addressed to Bede, and sev. epistles.

Beverley, John (of fourteenth century), Carmelite monk; he was doctor and prof. of divinity at Oxford and wrote *Questiones in Magistrum Sententiarum* and *Disputationes Ordinariæ*.

Beverly, tn. of Essex co., Massachusetts, U.S.A. It is situated on an inlet of the Atlantic opposite Salem. By rail it is 18 m. N.E. of Boston. Its importance is due to its harbour, its fisheries, and a large manuf. of shoes. Pop. 25,000.

Beverwijk, com., prov. of N. Holland, 7 m. by rail from Haarlem. Pop. 26,000.



B.B.C.

ERNEST BEVIN

Bevin, Rt. Hon. Ernest (b. 1881), Eng. politician. He was for many years general secretary of the Transport and General Workers' Union, being popularly known as the Dockers' K.C. He was appointed chairman of the General Council of the Trades Union Congress in 1937, and has been M.P. (Labour) for Central Wandsworth since 1940. When Mr. Winston Churchill formed his gov. in May 1940 B. was appointed minister of labour, and it fell to him, at a difficult time, to mobilise the man-power of the country without so straining the principle of industrial conscription as to excite the hostile criticism of the left-wing elements in the country. In this he was certainly successful. In 1945, when the term of the Coalition Gov. was approaching its end, B. made it clear that Labour proposed to revert to party 'warfare.' On Labour's return to office in the summer of that year, B. became foreign secretary in Mr.

Attlee's Gov. In Jan. 1946 he took part in the Foreign Ministers' Conference in Moscow, where he supported the establishment by the United Nations of a commission for the control of atomic energy. In the House of Commons (Mar. 1946) he took a strong line with regard to Russian intransigence over Persia, the Polish army in Italy, and other questions. At the meeting of the U.N.O. Security Council he strongly defended Brit. policy in Greece against allegations made by the Ukrainian delegates; and he took an equally firm stand on Brit. policy in the question of the Russian military occupation of Persian Azerbaijan. At the foreign ministers' conferences in the summer of 1946 his name was associated with a plan for the formation of a Federated Germany composed of a number of semi-autonomous 'states.' In Feb. 1946 B. was made an honorary citizen of Missolonghi as a token of gratitude for his services to Greece—an honour which was awarded to Lord Byron in 1824. In 1947-48 he was largely responsible for the conception of a W. European pact by way of counteracting the gradual westward infiltration of Russian Communist influence. A W. European treaty, valid for 50 years, finally took shape at the Brussels conference in March 1948. (See BRUSSELS TREATY, 1948.) He was awarded the order of Suvarov, 1944; Privy Councillor, 1940. His speeches and broadcast addresses were pub. in 1942 under the title *The Job to be Done*.

Bevis of Hampton, prin. character of an Eng. medieval romance. His father was Sir Guy, earl of Hamptoun (Southampton). On the murder of his father by the Emperor Divoun of Almayne, his mother sold him to heathen merchants as a slave. Thus he journeyed to Ermonyn (Armenia), where he won the affection of the King Ermyrn and the love of his beautiful daughter, Josian. The conquest of Brademond of Damascus, the slaying of a ferocious boar, and of a dragon, and the overthrow of a giant named Ascapart, whose life he spared, are among his achievements. He possessed a celebrated sword called Morglay. His death after 30 years of domestic felicity took place at the same time as that of his wife and his horse, Arundel. The story was retold by Michael Drayton in *Polyolbion* (1622). Dr. Kölbinger ed. the romance for the Early Eng. Text Society in 1885.

Bewdley, bor. of Worcestershire, Eng., on the Severn, 14 m. N.N.W. of Worcester. It has manufs. of leather, combs, brass and iron ware, malt, bricks, and rope. The tn. is an anct. one, and its prosperity dates from the fifteenth century. Pop. 3000. See also BALDWIN OF BEWDLEY, EARL.

Bewick, Thomas (1753-1828), Eng. wood-engraver, was the son of the lessee of a small colliery. Showing small aptitude for learning, but decided talent for art, he was apprenticed, in 1767, to Ralph Beilby, a Newcastle engraver, with whom he afterwards entered into partnership. Having pub. many woodcuts in his *Select*

Fables, he estab. his reputation as a dexterous, accurate engraver by the vignettes and tail-pieces of his *Quadrupeds*, which appeared in 1790. His self-taught genius, and virile humour, however, are most conspicuous in his *History of British Birds*.

Bewsher, Samuel (1852-1915), Eng. schoolmaster, and once bursar at St. Paul's School. He was the founder (1881) of the preparatory school of Colet Court which prepares boys for St. Paul's School.

Bex, tn. of Switzerland, in the Rhône Valley, about 30 m. from Lausanne, with which it is connected by rail. There are salt mines. Pop. 5000.

Bexhill, holiday resort, 51 m. W. by S. of Hastings, on the coast of Sussex, Eng. Pop. 21,000; in 1881 it was 2000.

Bexley, tn. on the Cray, in Kent, England, 5 m. S.E. of Woolwich. Pop. 33,000.

Bexley, Nicholas Vansittart, first Baron (1766-1851), Eng. politician. *b.* in London, Oct. 29, 1766, son of Henry Vansittart, a governor of Bengal. Began political life by writing pamphlets in support of the Pitt Gov. Entered the Commons as M.P. for Hastings in 1796, and sat for various constituencies, without a break, for 25 years, until he was raised to the peerage. He was joint secretary to the Treasury in 1801, and again, under Sidmouth, in 1806, and estab. a reputation as a financial expert. Thereafter and in times of national difficulty he generally succeeded in getting his resolutions passed, but it is open to question whether they were not rather more complicated than sound. His contention that cash payments had no connection with the then unfavourable rate of exchange was clearly unsound; his contention that the public regarded promissory notes of the Bank of England as legal coin of the realm is, however, perfectly sound to-day. It was with such arguments that he defeated the bullion committee, which had been appointed to make recommendations. In 1812, as chancellor of the exchequer, he brought forward a 'new plan of finance,' a complicated measure for abrogating much of the existing sinking fund statutory provisions of 1802 and, despite the opposition of Huskisson and Tierney, his plan passed the House. After Waterloo, when the nation confidently anticipated a reduction of taxation, he declined to abolish the property or income tax and instituted further complicated schemes for effecting economies in the National Debt services. He was now highly unpopular and, eventually, in 1822, resigned. *D.* at Foot's Cray, Kent, Feb. 8. *Consult* Spencer Walpole, *History of England*, 1890.

Bev, see Bkg.

Beysers, Christian Frederik (1869-1914), S. African soldier, *b.* in Cape Colony, practised as lawyer at Witwatersrand. On Boer side in war of 1899-1902, became general. Under Brit. rule, Speaker of Transvaal House of Assembly, 1906. Commandant-general of Defence Force of S. Africa, 1910; visited England, 1912. At outbreak of the First World War, re-

signed, and joined in Maritz's rebellion. Caught trying to cross Vaal at Greyling, Dec. 7, 1914, he was shot at and fell into the riv., where he was drowned.

Beyle, Marie Henri (1783-1842), Fr. author, known by his pen-name of *Stendhal*, *b.* at Grenoble. He was in turn soldier, shopman, and diplomatist. After some years spent in the commissariat, he accompanied Napoleon on the Russian campaign, and was present during the retreat from Moscow. After the fall of Napoleon, he refused to continue in his position, and took up his residence in Milan. In 1821 he was compelled to leave this city, and returned to Paris, where he soon became known in literary circles. In 1830 he was appointed consul at Trieste and then at Civita Vecchia, and in this post he continued till his death at Paris in 1842. His works are numerous, chiefly falling into the divs. of critical works and novels, and they are all remarkable for fineness of observation and for the extraordinary abundance of their ideas. Of the first div. are *Histoire de la peinture en Italie*, 1817; *Rome, Naples, et Florence*, 1817; *Racine et Shakespeare*, 1823, 1825; *Promenades dans Rome*, 1829. His chief novels are: *Armance*, 1827; *Le Rouge et le Noir*, 1831; *La Chartreuse de Parme*, 1839. Amongst a variety of miscellaneous works the following are interesting: *Essai sur l'amour*, 1822; *Mémoires d'un touriste*, 1838. *Correspondance*, 1855; *Journal de Stendhal*, 1888; *Vie de Henri Brulard*, 1890; *Souvenirs d'égoïsme*, 1892; and *Lettres à sa sœur*, 1892, all pub. posthumously, are valuable as autobiography. Stendhal's chief characteristic is his egotism. He had the gift of psychological analysis, and it is for this, rather than for continuity and arrangement of plot, that his novels are so outstanding. He was one of the *idéologues* of the early nineteenth century (c. 1822), and has been hailed as a precursor of romanticism and realism. B.'s stock has risen appreciably in recent times, and it has been justly said that he was a century before his true era. Balzac said of him: 'M. Beyle is one of the superior men of our time. It is difficult to explain how this observer of the first order, this profound diplomat who, whether in his writings or in his speech, has furnished so many proofs of the loftiness of his ideas and the extent of his practical knowledge should find himself nothing more than consul at Civita-Vecchia. No one could be better qualified to represent France at Rome.' His works are many in number, and they are remarkable for fineness of observation and for the extraordinary abundance of their ideas. See A. Paton, *Henri Beyle*, 1874; E. Rod, *Stendhal*, 1892; F. C. Green, *Stendhal*, 1939.

Beylerbey, see BEGLERBEK.

Beypur, seaport of India, Malabar dist. of Madras, near mouth of Beypur R. It is on the railway from Madras across India. Some iron and coal are found in the vicinity. Pop. 7000.

Beyrich, Heinrich Ernst (1815-96), Ger. geologist and paleontologist, *b.* at Berlin. In 1856 he became prof. of geology and

palaeontology at Berlin Univ., and in 1873 director of the geological dept. His pub. works include *Beiträge zur Kenntniss der Versteinerungen des rheinischen Übergangsgebirges*, 1837; *Konchylien des Norddeutschen Tertirgebirges*, 1853-57.

Beyrout, see BEIRUT.

Beysohlag, Willibald (1823-1900), Ger. Protestant theologian and writer, b. at Frankfurt-on-Main. His numerous works include: *Die Christologie des Neuen Testaments*, 1866; *Leben Jesu*, 2 vols., 1855, 3rd ed. 1893; *Neutestamentliche Theologie*, 2 vols., 1891-92; *Christenlehre auf Grund des kleinen lutheranischen Catechismus*, 1900; and an autobiography, *Aus meinem Leben*, 1896-98.

Beza, or **de Béze**, Theodore (1518-1605), Fr. theologian, b. at Vézelay in Burgundy. He studied at Orleans, under the learned Melchior Volmar, who both taught him Gk. and also inspired him with his first leanings towards Protestantism. He studied law for some time, but gave himself largely to polite society and literature these two influences producing his *Poemata juvenilia*, a vol. of loose verse pub. 1548, the thought of which later gave him great pain. In 1548 he had a severe illness, which brought about his conversion. He had already given up the idea of taking orders in the Rom. Church, and now, after marrying his mistress, Claudine Denosse, he joined Calvin at Geneva, and became prof. of Gk. at Lausanne. In 1550 he pub. a drama on *The Sacrifice of Abraham*, and began a series of lectures on parts of the N.T., which ultimately led him to trans. the whole of it into Lat. In 1559 he returned to Geneva, where he was prof. of theology with Calvin. In 1561 he represented the Protestants at the Conference of Poissy, returning to Geneva in 1563. Next year Calvin d., and B. was called on to take his place as head of the reformed churches of France and Geneva. In 1571 he presided over the synod of La Rochelle. His best-known works are an ed. of the Gk. Testament, *De Hæreticis a civili magistratu puniendis*, and the doubtful *Histoire ecclésiastique des églises réformées du royaume de France*; while his *Confessio and Tractationes Theologicæ* are still of value to theologians. Beza's Codex, the Codex Bezae, or Codex D. is a Gk. MS. of the N.T. in uncial characters, dating from about the sixth century. B. presented it to the univ. of Cambridge in 1581, with a rather untrustworthy account of its hist. See lives by Heppé (1861), Baird (1899).

Bezant, or **Byzantine**, name of a coin of the Byzantine empire. The value of the gold B. varied from 10s. to a sovereign, that of the silver B. from 1s. to 2s. They were not made in the same impression as earlier Rom. coins, and in sev. cities where the Byzantine standard was adopted they were copied. Owing to the commercial relations which the Byzantine empire then had they were distributed throughout the known world. They were in use in England and India until the reign of Edward III. The fact of their being brought home by crusaders led to their use in Eng. heraldry, for which see BEZANT (heraldry).

Bezant, in heraldry, belongs to the group of roundels or pellets, disks or balls of different colours. The name B. is generally confined to the golden roundel, though occasionally the silver roundel is included. In olden times it was considered that the B. and the silver roundel, as representing coins, should be drawn as a flat surface, the other roundels being drawn as balls. The arms of Beulay of Wharfedale were 'gules a bezant.' For further particulars see under HERALDRY.

Bezdan, tn. of Yugoslavia, co. of Bács-Bodrog, on a canal joining the Danube and the Theiss, near the former riv. Pop. 8000.

Beziers, cap. of an arron. in the dept. of Hérault, France, on R. O.b and Canal du Midi, is beautifully situated on the slope of a hill. It contains architectural monuments, of which the chief is the early Gothic cathedral, rebuilt in the fourteenth century. The tn. also possesses remains of Rom. occupation in the ruins of an aqueduct and an amphitheatre. In 1209 the tn., which was a centre of the Albigenses, was taken by Simon de Montfort and the inhab. were put to the sword. In later times it was a centre of the Huguenots. It manufs. silk and woollen goods, brandy, wines, chemicals, etc. Pop. 72,000.

Bézique (corruption of Fr. *bésigue*, origin uncertain), game at cards which, under varying rules, may be played by 2, 3, or 4 persons, the number of packs being the same as the number of players. Usually played by 2 players. The piquet pack of 32 cards is used, but in duplicate, the 2 packs being shuffled together. The dealer then deals 8 cards to each player, dealing 3, 2, 3, and the cards that remain are laid on the table between the players, forming the 'stock.' Trumps are fixed either by turning up the top card of the stock or by the suit of the first marriage or sequence (see below) which occurs during the game. The non-dealer then plays the first card, and the second player is not compelled either to win the trick (which he can do by trumping or by playing a higher card of the same suit) or to follow suit. Unless he has something to declare, he will probably avoid winning the trick. After each trick, each player takes a card from the stock and places it in his hand, the winner taking the top card. This continues until only 2 cards remain in the stock. The trick that follows is called the 'last trick,' and after the stock is exhausted the last 8 tricks are played under different rules. The aim in B. is not to gain tricks. It is (1) to secure certain combinations of cards in the hand, which, when declared, add to the score; (2) to gain in play briques, i.e. as many aces and tens as possible; (3) to win the 'last trick,' which, as explained above, is not the last trick of the game. Scores are gained as follows: *Marriage* (king and queen of any suit), 20; *Royal Marriage* (king and queen of trumps), 40; *Sequence* (ace, ten, king, queen, and knave of trumps), 250; *B.* (queen of spades and knave of diamonds), 40; *Double B.* (all the B. cards), 500; four aces (of any suit,

whether duplicates or not), 100; four kings, 80; four queens, 60; four knaves, 40. These are all gained by declaration. Winning of last trick, 10. In addition to this, if the dealer turns up the seven when turning up for trumps, he counts 10. If the seven of trumps is in the hand, the player may either exchange it for the card turned up, or declare it and count 10. Lastly, at the end of play, each player counts up the number of aces and tens in the tricks he has won, and registers 10 for each.

The deal goes on alternately until one of the players has scored 1000. This closes the game. If the loser has scored less than 500 points, the game counts double. Three and four-handed B. are played under almost the same rules. In four-handed B. the players may form partners, declarations may be made after a win by either partner, and B. may be from either hand. Other forms of the game are Polish (or open) and Rubicon Bézique.

Bezoar, or **Bezoar Stone**, concretion or hardened mass occasionally found in the stomach or intestines of ruminating animals, as goats, llamas, antelopes, cows, etc. The name is of Persian origin, and means antidote to poison, the stones obtained from the Persian wild goats being at one time much esteemed in that connection. They appear to be formed through the presence of some irritating substance in the alimentary tract. Balls of hair are found in the intestines of Brit. cattle, but these have little or no accretion. The term is sometimes applied to the fossilised dung of extinct animals found in the Lias beds of Gloucestershire.

Bezwađa, tn. in Madras, India, on the l. b. of the Kistna, 44 m. N.W. of Masulipatam, a rapidly growing centre for riv., canal, and railway traffic. Pop. 46,000.

Bhagalpur: (1) City of India in Bihar in dist. of the same name, on r. b. of Ganges, 265 m. by rail from Calcutta. Pop. 70,000. (2) A dist. in Bihar, divided into 2 nearly equal divs. by the Ganges. Lowlands are fertile and well cultivated. The chief manuf. is indigo, and rice and other cereals are well cultivated. Area 4226 sq. m. Pop. 2,100,000.

Bhagavad-Gītā (the song of the blessed), religious and philosophical poem of India which is inserted as an episode in the sixth book of the *Māhābhārata*. It begins with describing the state of war between the 2 tribes of the Pāndus and the Kurus. The 2 tribes are closely united in blood, and this renders Arjuna, chief of the Pāndus, unwilling to slaughter his adversaries. But Krishna is with him in the form of his charioteer, and now recalls him to his duty, and instructs him in the work of a warrior. As the instruction continues it becomes more elevated and mystical, until at last Krishna reveals himself as the supreme lord of creation. The work is the greatest ethical product of Indian philosophy, but there is much confusion of elements caused by the various alterations it has undergone. Pantheistic and monotheistic ideas are mingled with high ethical teach-

ing. The main aim of the book is to teach the way of mystic souls to the Yoga or absorption in the Deity, which it proposes as the highest aim of humanity. The later recension of the work shows traces of the influence of Buddhist and possibly even of Christian thought. *The Song Celestial* is a translation or paraphrase of the B. done into blank verse by Sir Edwin Arnold. See N. Macnicol (ed.), *Hindu Scriptures* (Everyman's Library); S. Radhakrishnan, *The Bhagavad-Gītā*, 1948.

Bhagirathi: (1) One of the chief head-streams of the Ganges, rising on the W. slopes of the Himalayas. It is regarded as sacred by the Hindus. (2) Branch of the Ganges which flows past Murshibad. Later it takes the name of Hugli, and forms one of its prin. outlets.

Bhainsar, fort and tn. on the top of a high rock in Rajputana, Udaipur, India. Famous for remains of temples to Siva.

Bhamo, tn. of Burma, on Upper Irrawadi, 40 m. W. of the Chinese frontier. Early in the twentieth century it became a centre on the trade route to the Yunnan prov., to which an Anglo-Chinese convention in 1893 gave special trading rights to Britain. Its chief industry is the transit of goods. During the military operations in Burma in 1944, B. fell to Chinese forces on Dec. 16. Pop. 7800.

Bhandara, cap. of dist. of B. in Central Provs., India, about 35 m. E. of Nagpur. Pop. 14,000.

Bhandarkar, Sir Ramkrishna (1837-1925), Indian orientalist, son of a Brahman civil servant. Was recognised as one of India's most distinguished orientalists, and represented the Bombay Presidency at the Vienna Congress of orientalists. He was the founder of the *Indian Antiquary* (1872); pub. *The Early History of the Deccan*, in 1884.

Bhang (Hindu word), name for Indian hemp (*Cannabis indica*), but applied to a narcotic drug formed from its dried leaves. It is used sometimes for smoking, either alone or with tobacco, sometimes it is strained in water to produce an intoxicating drink, sometimes it is used for chewing. It is in common use among the Indian races, and also among the Arabians and Egyptians. In addition to intoxicating effects, it produces various kinds of hallucinations, in the same way as opium.

Bhanpura, tn. of India, native state of Indore, on the Rewa; pop. 15,000.

Bharatpur, or **Bhurtpoor**, state in Rajputana, India, ruled by a maharaja. The surface is generally level and fertile, but the country suffers somewhat from lack of water, being traversed by only one riv. The cap. of the state is the tn. of B., whose immense mud walls still remain. It successfully resisted a siege by the Brit. in 1804, but was captured by storm by them in 1826. Area of state 1978 sq. m.: pop. (1941) 576,000. Pop. of tn., 36,000.

Bhartrihari, Indian poet who is supposed to have lived during the first century B.C. The best-known work attributed to him is a collection of apophthegms, arranged in 3 centuries or groups of 100. It is possible that they are the

work of various hands. The first century deals with love, the second with ethics and morality, the third with asceticism, and devotion to the Divine Being. A critical ed. by Böhlen appeared at Berlin in 1833.

Bharuch, see BAROACH.

Bhatgón, or Bhatgong, tn. of Nepal, 5 m. S.E. of Khatmandu. It is a favourite residence of the Brahmans. Pop. 30,000.

Bhatkal, tn. in the S. of Bombay, India, 80 m. N. by W. of Mangalore. Was a prosperous mart from 1300 to 1600. Pop. 6000.

Bhattacharya, see KUMARILA BHATTA.

Bhau Daji, or Ramkrishna Vital (1822-1874), Indian physician, a Sarasvat Gond Brahmin, b. at Mandra, Goa; educated in Bombay, and became a teacher in the Elphinstone School; studied medicine at the Grant Medical College, 1845-50. He did some valuable research work in connection with the cure of leprosy.

Bhaunagar, or Bhavnagar, state of Baroda, India, ruled by a maharaja; formerly part of the Bombay presidency, but in 1943 was transferred for administrative purposes to Baroda. The cap. is the tn. of B., a port on the gulf of Cambay, 60 m. N.W. of Surat. Area of state, 2981 sq. m. Pop. (1941), 618,000; pop. of tn., 65,000.

Bhavabhuti, Indian dramatic poet who fl. at the beginning of the eighth century of our era. He came of an illustrious Brahman family, and is the author of 3 Sanskrit dramas which raise him to the level of Kālidāsa and Harsha. The 3 are the *Maha-vira-charita*, *Uttara-rāma-charita*, and *Mālati-Mādhava*, the story of the two first being drawn from the legend of Rama. All three have been trans. into Eng. separately.

Bhavagad Gita, see BHAGAVAD-GITA.

Bhavani-Kudal, tn. of Madras Presidency, India, on Bhavani and Cauvery Rs., 58 m. N.E. of Coimbatore, containing temples to Vishnu and Śiva. Pop. 10,000.

Bhera, tn. on the Jhelum, in Punjab, Pakistan; dist. Shahpur. Pop. 17,000.

Bhils, aboriginal, pre-Aryan people of Central India, found scattered over the hilly dists. there, but especially in the Khandesh dist. of Bombay and the Vindhya Hills. They were driven out of the fertile dists. by the Aryan invaders, and thenceforth led the wild, nomadic life of outlaws. An unsuccessful attempt having been made to subdue them, the Bhil Corps was formed in 1825 to utilise their fighting instinct, and this corps secured some order in their dists. The Bhil is short, dark, active, and a great woodman; he is brave but superstitious. They number about a million.

Bhilsa, tn. of India, on the Betwa R., 26 m. N.E. of Bhopal. It grows a coarse tobacco, in which it carries on some trade. To the S.E. of B. is Sanchi, remarkable for a group of Buddhist topes, chief of which is the Great Top. B. itself also possesses some of these buildings.

Bhima, riv. of India, 398 m. long, rising in Bombay. After flowing through Hyderabad, it joins the Kistna near Muktl.

Bhir, tn. on Pandsura R., in Hyderabad, India.

Bhiwani, tn. in Hissar dist. of Punjab, India, 38 m. S.E. of Hissar by rail. Commercial centre, with trade in salt, spices, and metal goods. Pop. 35,000.

Bhobaneser, see BHUVANESWAR.

Bhojpur, tn. of Shahabad dist., Bihar, India, 8 m. E. of Buxar. Pop. 10,000.

Bhopal, state of Central India, founded in 1723 by Dost Mohammed Khan. In 1818 a treaty of dependence was concluded between Britain and this state, which had always shown itself friendly. It is crossed by the Vindhya Hills, and is hilly but generally fertile. The cap., also named B., 325 m. S.W. of Allahabad, is watered from 2 large artificial lakes in the dist. Pop. 50,000. Pop. of state (1941) 785,000; area 6900 sq. m.

Bhor, state of India, formerly in the Bombay Presidency, but since 1933 grouped within the Agency of the Deccan and Kolhapur States. Area 1491 sq. m.; pop. 131,000. The cap. is the tn. of B., 30 m. S. of Poona; pop. 4000.

Bhownagree, Sir Mancherjee Merwanjee (1851-1933), b. in Bombay, the son of a Parsee merchant; educated at Elphinstone College and Bombay Univ.; became sub-editor of the *Statesman* in 1871. In 1873 he became state agent in Bombay for the maharaja of Bhaunagar, and in 1881 came to England to study law. In 1895 he entered Parliament as Conservative member for Bethnal Green. He was created K.C.I.E. in 1897. Author of *History of the Constitution of the East India Company*, 1871, and a Gujarati translation of Queen Victoria's *Life in the Highlands; Loyalty of India*, 1916.

Bhuj, cap. of the state of Cutch, India. The tn. has a pretty appearance on account of its white-topped mosque and pagodas. Pop. 19,000.

Bhurtpoor, see BHARATPUR.

Bhusawal, tn. in the dist. of Khandesh, in Bombay, India, 115 m. S. of Indore. Has important railway works. Pop. 26,000.

Bhutan, independent state in the E. Himalayas, bounded on the N. by Tibet, on the E. by various independent mt. states, on the S. by Assam and Bengal, on the W. by the independent state of Sikkim. The surface is extremely varied, and B. presents a series of lofty, forest-clad mt. ranges, alternating with deep-cut valleys. Through these valleys swift rvs. run in a southerly direction, ultimately joining the Brahmaputra. The chief of these are the Mānas, the Machu, and Chinchu. The dist. has only been explored during the last few decades, and in 1904 an expedition was sent there which did much valuable surveying work. There were formerly 2 supreme chiefs of the state, the Dharm raja, head in spiritual matters, and the Deb raja, head in temporal affairs. But in 1907 the governor of West Bhutan was elected hereditary maharaja by the Buddhist ecclesiastics and people. The Bhutians are industrious, their agric. produce being their chief exports. Among these are the famous horses, mules, native cloth, salt, etc. Nominally the religion is

Buddhism. The area of the state is estimated at 13,000 sq. m., and the pop. at 250,000. Chief tns. are Tassissudon and Punakha (the cap.). There was war between Great Britain and B. in 1865, and the Deb raja threatened to send against the invading Brit. a force of 12 gods who were 'very ferocious ghosts.' For a time the prestige of Brit. arms was shaken, but a treaty was signed on Nov. 11, and thenceforth the 2 countries have been on friendly terms. The huge feudal castles of B. and the Buddhist temples in inaccessible situations, such as Tak Thsang, the Tiger's Nest, are described by the Earl of Ronaldshay in *Lands of the Thunder-bolt*, 1923.

Bhuvaneswar, or **Bhubaneser**, city of Puri dist., Orissa, India, 16 m. S. of Cuttack. While largely in ruins, it has a temple to Siva, and a trade in cloth and rice. Former cap. of Resari dynasty of Orissa.

Biafra, Bight of, bay on the W. coast of Africa, on that part of the gulf of Guinea lying between Cape Formosa on the N. and Cape Lopez on the S. It contains the is. of Fernando Po (Sp.), Prince's and St. Thomas (both Portuguese). Into it flow various important rivs., the Niger, New Calabar, Old Calabar, Rio del Rey, Cameroon, and Gaboon.

Biala, tn. in Poland, 34 m. E.S.E. of Siedlce, on the main line between Warsaw and Moscow. Pop. 15,000.

Bialik, **Chaim Nachman** (1873-1934), Hebrew poet, b. in the Ukraine. Opposed the Bolshevik regime mainly because of its suppression of the Hebrew language; and went to Palestine where he became a national hero. He is indeed looked upon as the best modern Hebrew poet and numerous streets in Jerusalem and other Zionist cities are named after him. *D.* in Vienna.

Bialystok, tn. of Poland, in the co. of the same name, situated on the R. Biala. It has manufs. of silk goods and hats, and a trade in grain and manufactured products. It belonged to Prussia from 1795 to the time of the treaty of Tilsit in 1807, when it was ceded to Russia. During the First World War B. was the scene of one of the final battles in the Ger. campaign against the Russians in 1915. In the Second World War the Gers. made a thrust towards the H.-Breit-Litovsk railway with the intention of hemming in the Russians in that area and completely destroying them, so as to be free to devote their energies to the W. Front. Sev. hard-fought encounters took place, but the Gers. eventually defeated the Russians towards the end of Aug., and B. was captured by the Ger. Eighth Army on Aug. 25. Taken by the Gers. in the invasion of Poland (Sept. 1939), but given up to the invading Russian army from the E. (See EASTERN FRONT IN SECOND WORLD WAR.) Pop. of the co. is 1,700,000 and of the tn. 92,000.

Biana, or **Bayana**, tn. of India, state of Bhartpore, near l. b. of the Gambhir R. It contains 2 anct. Hindu temples, and in ages past was a city of importance. Pop. 7000.

Blancavilla, tn. of Sicily, 20 m. N.W. of Catania, on the S. slope of Mt. Etna. The dist. produces wine and grain, and cotton-stuff is made and exported. Pop. 21,000.

Bianchina, **Francesco** (1662-1729), It. astronomer, b. at Verona. He was a favourite of Pope Alexander VIII., whose librarian he had been, and continued in favour under Clement XI., who made him secretary of the committee for the reformation of the calendar. He wrote works of astronomical and archaeological interest, and *Istoria Universale*, 1697.

Biandrata, **Giorgio**, see **BLANDRATA**.
Biard, **Auguste François** (1798-1882), Fr. genre painter, b. at Lyons. He visited the Levant, Greenland, and Brazil, and his pictures show the influence of these journeys. Among his best-known paintings are the 'Beggar's Family,' the 'Slave Market,' the 'Fight with Polar Bears,' the 'Wandering Players,' and the 'Mad-house.' In addition to this type, on which his fame chiefly rested, B. also painted historical scenes.

Biarritz, watering-place of S.W. France, dept. Basses-Pyrénées, on bay of Biscay, about 5 m. W.S.W. of Bayonne. Under the patronage of the Emperor Louis Napoleon, or rather of the Empress Eugénie for whom that monarch erected the Villa Eugénie here, B. rose from a small fishing vil. to a large tn. It depends for its prosperity entirely on its visitors, for it has no important industries. The air is salubrious, and the country pleasing. It has 2 casinos, luxurious villas and hotels, bathing, golfing, etc. Pop. 21,000.

Bias (c. 550 B.C.), son of Teutames, b. at Priene, in Ionia, was one of the seven sages of Greece. He became a distinguished citizen of his native tn., and many of his apophthegms have been preserved. The stories associated with his name, such as his persuasion of the Ionians to settle in Sardinia, are probably unauthentic.

Bias, **India**, see **BEAS**.
Bib, **Whiting-pout**, or **Brassy**, popular names of the *Gadus luscus*, a fish belonging to the family Gadidae and of the same genus as the cod, whiting, and haddock. It is about a foot long and less than 5 lb. in weight. It occurs in the N. Sea and Arctic Ocean.

Biban-el-Moluk, valley of Upper Egypt, near ruins of Thebes, in which are the tombs of the anct. Egyptian kings of the eighteenth, nineteenth, and twentieth dynasties.

Bibbiena, tn. in the prov. of Arezzo, in Tuscany, Italy. Pop. of commune, 9000. The church of S. Lorenzo was hit sev. times by bombs in the Second World War, and its roof was holed, but the two great Della Robbia reliefs were undamaged.

Bibbiena, **Bernardo Dovizio da** (1470-1520), It. cardinal, was the son of poor parents. Having entered the service of Cardinal Giovanni de' Medici, he followed him to Rome after the death of Alexander VI., and was there entrusted by Pope Julius II. with sev. important commissions. When his patron became pope in

his turn as Leo X., he presented B. with his cardinal's hat in the year 1513, and some years later dispatched him to France as legate. On his return to Rome he *d.* suddenly, his death having been accelerated by a heated argument with the pope, who accused him of intriguing to succeed him in the papacy. He had a lively interest in the progress of literature, and himself wrote plays in the manner of Terence.

Bibby Steamship Line. This line has traded with India for over a century, having been founded by John Bibby in 1807. The fleet now consists of motor vessels (Diesel), besides sev. twin-screw steamers, averaging 8000 tons and built at Belfast by Harland and Wolff. They carry cargo, mail, and first-class passengers, and run principally to S. India, Ceylon, and Rangoon. The line is now operated by the firm of Bibby Bros. & Co., bankers and shipowners, of 6 Water Street, Liverpool.

Biberach, tn. of Württemberg, on the R. Riss, 23 m. S.S.W. of Ulm. B. is mentioned in the eighth century as a vil. and in the fifteenth century it became a free Imperial city. During the Thirty Years war it was held by the Swedes for some time. In 1796 Moreau defeated the Austrians here and St. Cyr defeated them again in the neighbourhood in 1800. A monument to Wieland, who was *b.* in the vicinity, was erected in front of the theatre. Before the Second World War B. had manufs. of machinery, leather, and toys. Pop. (1939) 11,000.

Bibirine, see BEBERINE.

Bibiru, see GREENHEART.

Bible, *The*. The name *B.* comes to us from the Gk. *βιβλία*, which means the (sacred) books. In the original Gk. it is a plural form, but was treated, because of its ending, as a singular noun in medieval Lat., and as such has passed into most of the modern European languages. The *B.* consists of 2 parts, the one the O.T., the other the N.T. In the O.T. are given the records of the covenant between the God of Israel and His chosen people, the Hebrews, a covenant which, being proved to be insufficient, was to be increased by a New Covenant which is distinctly promised by the prophets, and which is founded by the life, teachings, and death of the Lord Jesus Christ. Christ Himself speaks of the new dispensation which was to be the New Covenant. In the early Christian Church the 2 divs. of the *B.* were known respectively as the Old and the New Covenants. The word covenant was rendered incorrectly by the Lat. word *testamentum*, and so has passed in the language of the modern world for the 2 divs. of the *B.*, the O.T. and the N.T.

The religion of the Hebrew race was a national religion—a religion which affected the state as a whole, in which the individual was unimportant. This national religion which bound them together, and this sense of unity, had come to them with the exodus from Egypt. From the time of the founding of the theocracy by Moses, the people had been bound into one united whole. Israel

was conscious of her sacredness and singularity as a people from the time that the promise had been sounded from Mt. Sinai: 'I am the Lord thy God, which have brought thee out of the land of Egypt, out of the house of bondage.' In this way and for this reason, the literature of Israel reflects the hist. of the people, and this hist. shows us a people now carried away by the enthusiasm of its ideals, now still convinced that it is a chosen people, but chosen by a God whose care was for Israel alone, and was independent altogether of moral conditions.

Historic tradition, which is essentially the feeling of a united people, traced the descent of the race from earliest times. The race had originally come from the E., had in the fullness of its power gone into Egypt, until there rose a Pharaoh who knew not Joseph, and then the period of their oppression follows. That they were not a united people then is obvious from the hist. of their Egyptian sojourn, but with the release from Egypt and the march to the promised land we get the beginning of that feeling of national unity, a unity which was bound up altogether with their religion. They were, however, in no sense a united nation as nations are united at the present time. They came from their wanderings in the desert to the promised land, but from the death of Joshua to the time of the prophet Samuel their unity is broken by constant warfare between the tribes; and with the vanishing of the common danger which had welded them together we get also the vanishing of the spirit of unity among the people. The book of Judges reflects the broken unity of the children of Israel, and shows us the people divided amongst themselves, and united only in the face of common dangers. But through the whole of this unsettled period we find that the tradition of unity lives on, especially in the minds and hearts of the greater men amongst the tribes, and this idea of national unity leads to the desire for a king who shall be to Israel the symbol of their unity and the anointed of God. Up to this time the centre of the monotheistic religion of the Hebrews was the sacred ark and the priesthood. This priesthood was aristocratic and conservative, and was at this period supplanted by the power of the prophets. The difference between priesthood and prophecy is that priesthood tends to conserve all that has been regarded as good and great in religion, but makes little forward progress; prophecy, on the other hand, is direct inspiration from God, by which religion is portrayed to the prophet in a new light and as a practical solution of the problems which were troubling the men of the day. The first of the great Israelitish prophets was Samuel. The spiritual tradition which runs so obviously through the O.T. and to which the N.T. is linked up, takes its beginning, to a great extent, in the work of Samuel and from his inspiration. Samuel was himself a priest, but is important in the hist. of Israel as a prophet. A new danger had arisen which it was necessary for the Israelites to face as a

united race. The incursions of the Philistines meant for them the renewal of the demand that they should have a king who would lead them in battle as a united nation. Samuel had the ideal of a united nation, but did not relish the idea that an ideal which he cherished of a nation united by the worship of Jehovah should be actually united by the headship of an earthly king. But he was wise enough to realise that for the preservation of the children of Israel as a nation it was necessary that they should have a king, and accordingly he gave them Saul. Then came the disobedience and downfall of Saul and the elevation of David, in this way beginning the great Davidic dynasty. Under the brilliant rule of David the Heb. race became a great nation, the rulers of a great empire, an empire which became their ideal. During the days which followed the downfall of the Hebrews, during the days of their captivity, they regarded the period of the Davidic empire as a period to be looked back to and revered as the greatest period of their rule. But they did also more than this: the recollection of their bygone greatness gave them the vision of a still greater kingdom which they would found with the Messiah as their leader, and so the days of the kingdom of David came to be regarded as the forerunner of the time when they should rule all the world. The ideal of the universal kingdom of God which their Messiah was to found was the outcome of the greatness of the temporal kingdom of David. This period of temporal greatness had also other effects as far-reaching as the former: from this time the hist. of Israel is bound up with the hist. of her prophets. The magnificent conceptions of the spiritual religion of the children of Israel to be found in the literature of the O.T. takes its rise from this period. Prophets had probably been in existence in Israel as long as the priesthood itself, but they had probably dwelt apart, and had taken no great part in the life of the people. From this time forth the prophetic writings of the prophets give the best conception of the greatness of the religion of Jehovah and lead up to the N.T. and the new dispensation which is actually joined up to these wonderful writings. Another effect this period had was to make Jerusalem the city of God and the centre of the national and religious spirit of the Hebrew people. The heart of the people turned in captivity to 'Zion,' the city of David, and Jerusalem became the symbol on earth of the heavenly city in which is the throne of Jehovah himself. The final view which must be taken of this short sketch of the hist. of the O.T. is the outcome of rivalry between the N. and S. tribes, leading to the div. of the kingdom into two, Israel and Judah. In the main, although at times unfriendly, the tendency of the two kingdoms was to remain on good terms. For a time they were able to subdue the smaller kingdoms which surrounded them, to offer resistance to the larger kingdom of Syria, but with the rise of the empires of Syria and Babylon the two

kingdoms fell and the captivity began. The shame, the horror, the self-contempt which were felt by the race for themselves is evident in the writings of the O.T. They felt that the idolatrous departures from the worship of the God of Israel had been punished deservedly by their exile and captivity, but throughout it all runs the idea that God will not leave them to perish ignobly in their chains, but will restore His chosen people and make them a great race with the coming of the Messiah. But with their first captivity their era of greatness ended as an independent nation. Empire succeeded empire, Babylon, Persia, Greece rose and fell, but the Hebrews remained as a race dependent upon their successive conquerors. Only for a century did they restore themselves as an independent race, and then again they fell before the rising tide of the great Rom. race. They were self-governing, that is, they governed themselves according to the law of Moses, but they were always the inferior, the conquered race. Such is the later hist. of Israel up to the destruction of Jerusalem (their Zion, the city of David, and the prototype of the city of God) by the Rom. legions in A.D. 70.

The main div. of the B., as has already been pointed out, is into 2 great divs., the O.T. and the N.T. The O.T. is divided in the Eng. language into 39 books, in the Heb. B., however, the div. was only into 24, 1 and 2 Kings, 1 and 2 Sam., 1 and 2 Chron., Ezra and Neh., and the 12 minor prophets being respectively counted as one book. This div. is not altogether stationary as far as the Heb. B. is concerned, the number being reduced by Josephus and increased by Epiphanius. The books were grouped together into 3 main groups or divs. The first the Torah or the Law, the second the Nebiim or the Prophets, and thirdly the holy writings or Kethubim. The Torah consists of the books of Moses or the Pentateuch; the writings of the prophets include the historical books, or the former prophets and the latter prophets—that is, the prophetic writings proper; while the poetical books comprise, in addition to the Ps., Prov., and Job, the 5 rolls, Ruth, Lam., Eccles., and Esther, together with the books of Dan., Neh., and Ezra.

The Law Books of Moses, and the Historical Books.—The tradition of the Jews ascribes to Moses the writing of the first 5 books of the B., to Joshua the book named after him, and to Samuel the books which take their name from him. Since all Jewish authorship was anonymous, it is obvious that this classification is conjecture, and a detailed examination shows that the question of authorship, not regarded as important amongst the Jews, is more complicated than it appears. Throughout the whole of the Pentateuch there are differences of style and language which show themselves also in the book of Joshua, and which prove that the books were not all written by the same hand, and that it was not all written at the same time. The evidence goes to prove that the books of the Pentateuch and the book

of Joshua, which cannot well be separated from the previous 5 books, are not subsequent narratives, but a series of independent narratives which have been carefully collected and ed. by one man. This view is supported also by the fact that sev. incidents are related more than once, and that many of the laws are repeated. Whenever reference is made to the name of Moses he is referred to as a prophet, i.e. a man who spoke to the people from God. But it is hardly to be credited that the books of the Pentateuch, which comprise a highly-organised priestly ritual, should have come in their present state from the hand of the prophet himself. In a close examination of the Pentateuch it became obvious that a part of it gave evidence of being pre-Mosaic: references were made to kings who ruled over the land of Edom before the children of Israel had kings; there were, as has already been pointed out, many parallel and double references, and one of the authors had a strong bias in favour of the priestly section of the community, devoting a great part of his writings to matters affecting the ritual of the Heb. These points were noticed by a Fr. physician, Jean Astruc (q.v.). The div. which he made corresponded with the div. that was emphasised by the writings, some of which were prophetic in tone, the others adopting the attitude of the priest. Astruc concluded that the difference corresponded with the employment of the term Jehovah (Lord) and Elohim (God). Exod. vi. 3 states distinctly that the name Jehovah was a name the employment of which only came into being with the Exodus. 'And I appeared unto Abraham, unto Isaac, and unto Jacob, by the name of God Almighty, but by my name Jehovah was I not known to them.' Accordingly, in this way the writings of the Pentateuch were divided according to their sources in Elohist and Jehovistic writings. The name God was taken as showing that the employment of that term indicated the earliest or primary writings, while the term Jehovah was used in what were regarded as supplementary writings. In this way arose the theory of the supplement-hypothesis. Hupfeld proved practically the existence of a third writer who agreed largely with the Elohist writer, but was also in many places widely different from him. He also expressed the opinion, which found wide acceptance, that the writings of this third author and of the 'Jehovah' authority were not supplementary, but were altogether independent writings. The 3 writers who have been mentioned interpret 3 different tendencies, 3 different points of view, expressing the prophetic mind, the priestly mind, and the mind of the layman. How these 3 points of view came to be united into one set of writings is only explained by the normal tendency of the Heb. genius, and more particularly by the methods of the Heb. copyists. The order of the writings seems to be the Book of the Covenant, followed by Deut., followed by the code of the priests, which is the out-

come of the time when the priesthood had assumed the position of a ruling caste, that is, after the Restoration. The books of the Pentateuch can be regarded as the outcome of the combination of writings of various periods in the hist. of the Jews, combined together and probably added to by the copyists who transcribed the writings. The Heb. copyist allowed himself a great amount of licence, since he copied equally from different authorities and gave any necessary harmony by his own additions. Almost all the writings of the O.T. may be regarded as compilations from various sources. The main idea running through the Heb. mind was the addition of part to part, not the development of a single idea, and this is exemplified in their genius of architecture, in the poetical books and the books of the law, and the historical books also.

The Poetical Books. The tendency of the Hebraic mind was not to express abstract ideas, but to use the medium of personal action and desire for the expression of feeling. The reduction of all experience to personal standards is reflected throughout the whole of the poetical books. To view things from the point of view of a theory only was to be almost impossible; they expressed themselves as the subject in question impressed them personally, and *not* in relation to the subject apart from its effect on them. The poetic structure of these books remains almost unchanged from the earliest examples of the Hebraic poetic art down to the latest; the rhythm consisted not of the fall of accent or the quantity of the syllables, but in a rhythm of the sense alone, a rhythm best known as a sense rhythm or parallelism. The authenticity of the Ps. as we have them at the present time is, as with the historical books, open to very grave doubts and very obvious criticisms. The Ps. which are ascribed to David, Asaph, and Solomon, to name only 3 of the authors given in the book itself, cannot be regarded as being strictly correct. The tendency is always to ascribe some anct. and honoured name to them, but while it is impossible to believe the authorship in every case, it is also wrong to deny any Davidic origin to any of the Ps. A number of them undoubtedly originated with David and with the other authors to whom they are ascribed. But, as with the historical books, it is impossible to overlook cases of parallelism, as e.g. Ps. xiv. and Ps. lili., which may be the result of the licence allowed to the copyist. It is also impossible to agree with the conclusion that all the Ps. are of the great exile period, since we have many examples of earlier Ps. and songs in the B. However, since the period of the exile the Ps. undoubtedly became the means of expression of religious feeling for the whole of the Heb. race. Amongst the other poetical books to which a similar criticism can be applied is the book of Prov., which is ascribed to Solomon. Solomon almost certainly contributed much of the wisdom of that book, but the whole of it cannot be ascribed to him. The book of Eccles., another example of

Hebrew poetic philosophy, was written probably some considerable time after the exile. The book of Job sums up the whole question of the religion of the O.T., the goodness and justice of God in relation to the merit of the sufferer. It asks the question why the lover of God is afflicted with grievous punishments, and the subject is debated and answered by the various speakers. Here, too, however, an obvious interpolation can be noted in the speeches of Elihu, who disconnects the argument, and whose speeches may be assigned to a later author.

The Prophetic Books. The prophetic writings begin with Amos, after whom the succession of prophets is regular. The older school of prophets, Samuel, Elijah, and Elisha, left no writings, neither did the prophet Jonah, the book called after his name being only an episode in his life. The later prophets wrote down their teachings or doctrines which they had not spoken but wished to be known. The office of a prophet cannot be likened to the priestly office, which was appointed. A prophet was a man of the moment, a man sent by God, with whom God spoke, to whom God appeared, and who was given a message to tell to the people directly from God. He did not even of a necessity see into the future, he need not as a prophet foretell events, he was there in order to interpret to the people the various acts of God, and to guide them over a crisis in the affairs of the nation. That he foretold the joys and splendours of the heavenly kingdom is due to the fact that it was necessary, in order that the people should strive after the kingdom of God, that the image of that kingdom should be ever before their eyes, and that they should be reminded of the greatness and goodness of Jehovah.

The customary Jewish div. of the prophets is the former prophets and the latter prophets. The former prophets were the records of Judges, Sam., and Kings; the latter are the writings of the prophets of the later period. These again are subdivided into the greater prophets and the minor prophets. The books of the former prophets are distinctly historical books, written round the central characters of the period, and influenced by the earlier Hebraic writings. Judges is simply a compiled narrative completed and arranged by the compiler; Sam., a book which centres round the doings of the prophet Samuel and the kings Saul and David. The book of Kings is again simply a compilation which, in conjunction with these other books, completes the hist. of the Jews from the entrance into the Holy Land down to the fall of Jerusalem. The latter major prophets consist of the writings of Isaiah, Jeremiah, and Ezekiel. The prophecy of Isaiah falls into 2 very distinct parts, the div. being chapters 1-39 and chapters 40-66. The latter is much later than the former, and even of the former it may be doubted whether Isaiah did actually write it all. The latter portion seems to have been written just previous to the restoration, a century and a half after the

original prophecies of Isaiah himself. Jeremiah's prophecies began during the greatness of the empire of Babylon, and were directed against the sins of the people; but while lamenting their sin and trying to turn aside the wrath which he saw must come, he eventually prophesies the restoration. Ezekiel *fl.* at the beginning of the sixth century B.C. He was carried off together with other exiles to Babylon, and from here he prophesied the coming fall of Jerusalem (586). Towards the end of his prophecies comes the prophecy of the future restoration of the nation, and he describes in detail the reorganisation of the restored nation. The 12 minor prophets were—as has been pointed out—regarded as the second div. of the latter prophets by the Jews, and also as a single book. The approximate dates of these minor prophets are: Amos and Hosea, 740; Zephaniah, 620; Nahum, about 600; Habakkuk, about the same time; Obadiah, after 586; Haggai, 520; Zechariah, 520; Malachi, 450; Joel, fifth century; Jonah, fourth century.

Canon of the Old Testament. The word canon is Gk. In its original meaning it signified a straight rod or rule. In its scriptural application it probably means the books which were considered the standard books by the Hebrews. All the writings included in the canon were held by the Jews to be the direct inspiration of God. The Jewish canon was divided into 3 distinct parts. The Torah, or the Books of the Law; the Prophets, consisting of 8 books—the former prophets and the latter prophets; and the Sacred Writings—the hagiographa—which consisted of the poetical books, the Psalms, and Dan., Ezra, Neh., and Chron. This div. represents probably the stages in the canonising of the various books. Since the closing of the whole canon by Ezra cannot be accepted, it is necessary to form an opinion from the internal evidence given in the books themselves as to the probable date when these 3 divs. became parts of the canon. The earliest canon seems to have consisted of the Torah, about 444 B.C., supplemented probably some 200 years later by the prophets, and again 100 years later by the hagiographa. The Heb. canon contained none of the books which form the Apocrypha. The Gk. translation of the B., the Septuagint, contained these, but they were pronounced against by Jerome at the end of the fourth century A.D. The old Lat. version and the Vulgate still, however, contained them, and the Council of Trent canonised them into the Catholic B. The Protestants of the Reformation, however, treated them in the same way as they had been treated by Jerome, and while acknowledging their utility as books of moral teachings, denied the divinity of their revelation. By the advanced sections of the Reformed Church they have been entirely rejected, and the canon of the O.T. is to them identical with the canon of the Hebrews.

The New Testament. During the period of Jewish hist. just previous to the birth of Christ the hopes of the coming of the

Messiah were revived. Some of the books of the Apocrypha, written during the last 2 centuries before Christ, had given full vent to this feeling. But it is necessary to state that the Jews did not put forward in any way the idea of a Christ who was to come and suffer death in this world. The rise of the literature of the N.T. did not come, however, with the beginning of the Christian religion. Christ himself left no writings; his disciples and followers at first did not realise the necessity for a literature to instruct future generations in the truths which they themselves had experienced. They looked forward to their release from this earth by the second coming of the Messiah, and this coming was daily, almost hourly, expected. The literature of the N.T. arose because ultimately there arose a situation which needed a literature; it was not written from any desire to emulate the writings of the older Heb. book. By undertaking his missionary journeys, Paul also undertook the necessity of creating a literature. When many small settlements of Christians grew up in all parts of the Rom. world, it became necessary either to visit them personally or to send letters of advice and counsel. In this way and for this purpose were written the epistles to the Thessalonians, which are the oldest Christian documents which we have, and both these epistles were written with the object of calming the agitation which had arisen from a belief in the immediate second coming of the Messiah. In the various epistles which St. Paul addressed to the Christian colonies he developed his ideas of the doctrines of Christ, and puts forward his view of the teachings. Beyond the 'eschatological' views which were beginning to subside, there was also now arising other views of doctrine which were a disturbing influence in the Christian Church, and which many of the Pauline epistles were written to rebuke.

The epistle to the Romans was a practical summing up of the gospel of St. Paul. He had planned a journey to Rome, but he knew that his visit to Jerusalem first was fraught with danger. Hence he sent his epistle to the Romans, in which we get a full and clear account of the Pauline doctrine. After this letter most of his epistles contain theories (Eph. and Col. are examples of this), but through most of these epistles runs his idea of the unity of the Church which was to unite both Gentile and Jew, 'that God might have mercy on all.' His epistles to Timothy and Titus are purely pastoral letters, written to his helpers when the charge of a church had been committed to them. The epistle to the Hebrews was not written by Paul, but probably by a disciple of his. Many theories have been put forward; Barnabas, Apollos, and Luke all being given by different authorities as possible authors.

The other epistles of the N.T. are to a great extent the following of the impulse already given by the 'apostle of the Gentiles.' They are usually known as the 'Catholic' epistles, a name given them since they were to appeal not to a special section of the Church, but to the 'univer-

sal' Church of Christ. The name Catholic also amongst the followers of the early Church was equivalent to the word canonical. First Peter was written for the Christians of the N. prov. of Asia Minor, who were probably at this time suffering persecution. The epistle of James is addressed to a larger section of the community of Christians. The epistles of James and Jude were written by the brothers of Christ, the epistle of Jude being addressed to a section of the Christians who appear to have fallen under the influence of men who were making the propagation of the gospel the work of mountebanks.

The Gospels and the Acts. The rise of the historical literature of the N.T. was probably delayed in much the same way and for much the same reasons as the beginnings of the epistolical literature. The early Christians did not consider it necessary to record the doings and sayings of our Lord, they were simply awaiting the coming of the Messiah. Gradually, however, there would grow up a tradition of the life and sayings of the Christ; the apostles and disciples travelling from place to place, would begin to feel the necessity for some written account of the life of Christ. They were constant travellers, they tarried but little in one place, it was probably long before they returned. During their absence it was necessary that instruction of some description should be given to their converts and followers. Hence came the desire for a written literature which would give that instruction, and would contain the beginnings of the historical literature of the N.T. The constant intercourse of the disciples one with another, the recollection of the sayings and doings of our Lord supplemented by one another, would give the necessary basis for a written account of the life of Christ, and would fix that life on definite lines.

Probably the earliest form of gospel that we have is to be found in the sayings of Christ which were written down in Heb. by Matthew, and which are generally known as the Logia. The writing of the Logia is confirmed by the statement of Papias (q.v.), bishop of Hieropolis, and it forms the core of the gospels of St. Matthew and St. Luke. The Logia did not supply the full needs of the Christian community, they in no way professed to be a complete record of the life of Christ, but it was for this complete record of the life of Christ that the Christians, as their hope of the immediate coming of the Messiah grew fainter, wished. And St. Mark, supplementing the tradition already held by the teaching of St. Peter, gave us our first complete gospel. This was written at Rome, probably between the years A.D. 64 and 70. The gospel according to St. Matthew was in reality simply the Logia together with the gospel according to St. Mark, and in the course of time this gospel superseded almost entirely the use of or the need for the original Logia. St. Luke's gospel is written largely from the historical point of view. It is addressed to a particular individual; it is

composed of much the same materials as the gospel according to St. Matthew, but is supplemented by the author from other sources. This was the first vol. of that writer's work, since it is generally accepted that St. Luke was also the author of the Acts of the Apostles. These 3 gospels form what are called the Synoptic gospels. The fourth gospel, that according to St. John, was written probably about the end of the first century. It contains much the same information as the synoptic gospels, and was probably written with full knowledge of what those gospels contained. But it is written from a highly ethical and idealistic point of view, and formulated the doctrines of the Christian creed in such a way as to reconcile them and make them more acceptable to the Gentiles. The fourth gospel has played the most important part in the hist. of Christian theology, and in the formation of the Christian creed. The Acts of the Apostles, as mentioned above, form the second contribution of the writer Luke, and seem, from internal evidence, to have been written in part at least by an eyewitness. They trace the hist. of the Christian Church from the death of Christ down to the coming of Paul to Rome, where they leave off abruptly, leaving the later hist. of the 'apostle to the Gentiles' in obscurity. The writings included in the N.T. form by no means the end of the writings of the early Christian Church. We have a number of writings of the followers of the apostles, who followed the traditional writings. Amongst these may be mentioned the gospel according to the Hebs., the Ebionite gospel, the Protevangelium of James, and the Acts of Paul. The canon of the N.T. was much disputed. The various churches adopted varying canons for the literature of the N.T., but early in the fourth century Eusebius gives us an account of the disputes, and reviews the books which were generally accepted. He gives 3 classes, the first of which was generally accepted, and included the Gospels, the Acts, the Pauline Epistles, 1 Peter, and 1 John, together with the Apocalypse. The other epistles, Jude, James, Peter, and 2 and 3 John, are questioned. Books such as the Acts of Paul and the shepherd Hermas are rejected. But the church of Antioch and the church of Syria give other lists. Under the influence of Athanasius, however, and at the Council of Carthage, the canon of the N.T. was fixed as we have it at the present day. Disputes, however, still rose with the Eastern Church, but in the course of time the canon as fixed by Athanasius and Jerome was generally adopted, since when the Christian Church has become the guardian and interpreter of the scriptures.

In the nineteenth century the rapid advance of natural science and materialist philosophy was thought by some to discredit the authority of the B. In recent years, however, the pendulum has swung the other way, and not only have the scientists realised and publicly avowed the limitations of scientific method, but also it has been shown that modern discoveries in archeology, astronomy, and psycho-

logy, correctly interpreted, and modern textual research, serve to throw new light on the spiritual truths revealed in the B.

Bible, English. Early translations in the Eng. tongue were made in MS. directly from the Vulgate. Bede tells us that Cædmon instructed by an angel put into poetical form 'the creation of the world and the beginning of the human race,' whilst Bede himself, although none of the work is now extant, is said on reliable authority to have trans. part of the gospel according to St. John into the Eng. tongue. During the centuries which passed between the death of Bede and the Norman Conquest no great attempt seems

The first Chapter.



It began
nynged
God
created hea
uen & earth
and y earth
was voyde
and empie,
and dar-
nes was v-
pon the de-
pe, & y spe-
ce of God
mued vps
the water.

And God sayde: let there be light, & there was light. And God sawe the light that it was good. Then God deuoyded y light from the darcknes, and called the light, Daye, and the darcknes, Night. Then of the eueninge and mornynge was maide the first daye.

A PAGE FROM COVERDALE'S BIBLE (1535)

to have been made at independent translations, and for the most part the work takes the form of glosses. With the coming of the Normans this translation ceased. But with the ultimate separation from the Continent, and the union of the Saxon and Norman people into the one Eng. race, the preponderating section of the community imposed their language and their customs on the conquering race. During the period of absolute Norman influence such translations as were done were into the language of the conquerors, but now versions were made in Eng. Previous to the great version by Wycliffe we have some evidence of parts of the B. have been trans. into Eng. during the fourteenth century. The early Wycliffe version was issued probably about 1382, and the later version 4 years after the death of Wycliffe, that is in the year 1388. What part Wycliffe himself actually took in the translation is not definitely known, it is, however, supposed on fair evidence that he trans. the gospels. The work began by the translation of the gospels,

and this part was probably finished some 20 years before the B. was pub. The probability is that the O.T. portion of the early version was the work of Nicholas of Hereford. The later version was probably the work of the successor of Wycliffe, John Pusey, and is certainly, as far as idiomatic Eng. is concerned, a great improvement on the early version. It was also popular, many copies of it remaining at the present day, in spite of the persecutions of the Lollards. These versions were the last of the MS. Bs. of England. In the fifteenth century William Caxton had introduced



In the beginning
God created the
heaven, and the
Earth.

2 And the
earth was with-
out forme, and
void, and dark-
nesse was upon
the face of the deepe: and the Spirit
of God mooued vpon the face of the
waters.

3 And God said, 'Let there be light:
and there was light.

4 And God saw the light, that it was
good: and God diuided the light from
the darknesse.

5 And God called the light, Day,
and the darknesse he called Night: and
the evening and the morning were the
first day.

6 And God said, 'Let there be a
firmament in the midst of the waters:
and let it diuide the waters from the
waters.

A PAGE FROM THE AUTHORISED
VERSION (1611 EDITION)

the art of printing into this country. The printing of an Eng. B. did not, however, immediately follow the introduction of the art of printing into the country. The B. had been printed in the Ger. states at least 70 years before an Eng. printed version appeared, and no complete Eng. B. was printed in England before 1535. A printed ed. of the N.T. by Tyndale appeared in 1525, having been trans. into the vernacular, and printed under difficulties. During the 10 years which followed, Tyndale also trans. and printed various other portions of the B. The characteristic point of the translations of Tyndale are their independence of the work of any other translator. The first full translation of the Eng. B. is the work of Miles Coverdale, which, although it must have been in progress at the same time as the work of Tyndale, was done independently of this. Coverdale prob-

ably, the Vulgate, and, from some evidence, Tyndale's. The first Eng. B. printed in England was the work of one Thomas Matthew (pseudonym of John Rogers, q.v.), who cannot claim to be an independent writer, since the greater part of his work is a reproduction of Tyndale and Coverdale. This B. was printed by the king's licence, and from this ed. of the B. we get all our subsequent eds., this being taken as the standard work. The next ed. of the Eng. B. was the 'Great B.', undertaken under the patronage of Thomas Cromwell, and giving on its title-page a picture of Henry VIII. presenting the B. to Cranmer and Cromwell, who in turn presented it to the clergy and laity. This B. was printed under the supervision of Coverdale, and while the printing of it was begun in Paris, it was finished in London, owing to the action of the Inquisitor-General, who attempted to stop the printing in Paris. In 1560 appeared the Genevan, or the 'Breeches' B., so called from the translation of Gen. iii. 7: 'They sewed fig leaves together and made themselves breeches.' The printing and publication of this B. were done at the expense of the congregation at Geneva. The B. was a thorough revision of the 'Great B.' The Bishops' B. was printed about the year 1568, and was undertaken as an authorised version of the Great B. But although it was intended to drive out the Genevan B., it never succeeded in its object. At the end of the sixteenth century and the beginning of the seventeenth century respectively appeared a N.T. and an O.T. trans. into Eng. by Catholics. The N.T. was printed at Rheims, and the O.T. at Douai in 1582 and 1609-10 respectively. They had a fair amount of influence on the A.V. of the B. which appeared in 1611. The work of bringing out the A.V. of the B. was one of the results of the Hampton Court Conference, called by James I. in 1604. He suggested the revision of the Eng. B., a work to be done by the best scholars in the kingdom. The version was to be without notes, since the notes of the Genevan B. seemed to the king to be seditious and dangerous. The men who were employed to do this work were divided up into 6 committees, each committee having a special section of the B. to work upon. The whole of their work was revised by a general committee. That the work was carefully revised is obvious from the fact that over 2 years were spent in that revision, and altogether the work took about 7 years. This version continued to be used, and still, in spite of the R.V., continues in general use in this country at the present time. The R.V. was the work of Convocation, it being determined in Convocation in 1870 that 2 committees should be formed for the revision of the Scriptures of the O.T. and the N.T. respectively. These committees were to have the power to invite the co-operation of any eminent scholar, no account being taken of nationality or creed. Co-operation was invited with America, and the work ultimately became the work of Eng.-speaking Christians throughout the world. The Rom. Catholic

Church alone refused co-operation. The version was completed by 1881, and was in that year presented to Convocation.

The Texts and Versions of the B. The earliest of all extant Heb. MSS. of the O.T. only dates back to the ninth century A.D. That is sev. centuries later than the earliest texts which we have of the Scriptures of the N.T. All the Heb. MSS. which we have at the present time are essentially Massoretic texts. The Massoretic texts are the work of a sect known as Massoretes, who, continuing in a way the work already done by the Targums and the Talmudists, set themselves the task of sifting from the mass of tradition and commentary of the Talmudists, and from the paraphrases of the Targums, the real, actual text of the O.T. Their work continued from about the sixth to the eleventh century. They provided the text with points to indicate the vowels, and thus went far in fixing the correct interpretation of doubtful passages. In this work they were making a distinct advance on the work of the Talmudists, who had said much concerning the correct vowel pronunciation of the Hebs., but had not actually provided vowel points for the MSS. After the production of an actual text from the mass of tradition of the Talmudists, extraordinary precautions were adopted for the safe preservation of the corrected MSS. Another text is that of the Samaritan Pentateuch, which differs in many places from the Massoretic text, the differences being usually of small importance, but the Massoretic text is preferred to this. This text contains only the Pentateuch, and is therefore not of very great importance. One of the most important versions which we have is that of the Septuagint, which is a copy of the books of the O.T. written in Gk. and probably made in Egypt during the third century B.C. The Septuagint version, however, when completed contained not only the books of the Heb. canon, but the books which have formed the books of the Apocrypha since the Reformation period. Of Syriac versions the most important is the Peshitto Syriac or the Simple Version made probably about the third century A.D. This version became a necessity to the Christian missionaries who were spreading abroad the doctrines of Christianity in the lands of Syria and Mesopotamia. There are also Coptic and Ethiopic versions which were used for much the same purpose in Egypt and the neighbouring countries. Of Lat. versions the 2 most important are the old Lat. version, which is far more important from the point of view of the N.T. than of the O.T., since it is not only a Lat. version of the Septuagint in the O.T. but an actual translation of the original Gk. in the N.T.; secondly, the Vulgate, the B. of the Rom. Church even at the present day, the O.T. of which was a translation by Jerome of the old Heb. text, the text which we now call Massoretic, and which, although it had not yet passed through the hands of the Massoretes, was substantially the same from about the second Christian century. See also SEPTUAGINT; TARGUM; VULGATE.

Bibliography.—RECENT TRANSLATIONS: R. F. Weymouth, *The New Testament in Modern Speech*, 1926; J. Moffatt, *A New Translation of the Bible*, 1934; J. M. P. Smith and E. J. Goodspeed, *The Bible: an American Translation*, 1935; R. Knox, *The New Testament of our Lord and Saviour Jesus Christ* (from the Vulgate Lat.), 1946. BIBLE STUDY: J. Hastings, *A Dictionary of the Bible*, 1909; R. Lee, *The Outlined Bible*, 1920; W. R. Inge, *The Bible and How to Read It*, 1931; Lutterworth Press, *Cruden's Complete Concordance of the Old and New Testaments* (new ed.), 1941; W. M. Clow, *Bible Reader's Encyclopædia and Concordance*, 1947; W. G. Scroggie, *Know Your Bible*, 1947. LITERATURE: S. H. Melloué, *The Apocrypha: its Story and Message*, 1927; W. F. Stead, *The Poetry of the Bible*, 1938; J. A. Bewer, *The Literature of the Old Testament in its Historical Development*, 1947; Sir F. G. Kenyon, *The Bible and Modern Scholarship*, 1948. HISTORY: C. A. Smith, *The Historical Geography of the Holy Land*, 1931; E. J. Hollis, *The Archaeology of Herod's Temple*, 1934; S. L. Calger, *Bible and Spade*, 1936; Sir C. Marston, *The Bible comes Alive*, 1937; E. W. Barnes, *The Rise of Christianity*, 1947; J. Finegan, *Light from the Ancient Past*, 1947; H. J. T. Johnson, *The Bible and the Early History of Mankind*, 1947. REVELATION: *The Westminster Commentaries* (27 vols.), 1899-1939; H. Drummond, *The Greatest Thing in the World and Other Addresses*, 1911; J. Moffatt, *Theology of the Gospels*, 1911; *The Clarendon Bible* (14 vols.), 1926-47; C. Gore, H. L. Goudge, and A. Guillaume, *A New Commentary on Holy Scripture*, 1928; *The Moffatt New Testament Commentary* (17 vols.), 1928-46; A. Nairne, *The Faith of the Old Testament*, 1933; R. H. Malden, *The Inspiration of the Bible*, 1935; L. D. Weatherhead, *It Happened in Palestine*, 1936; S. C. Carpenter, *The Bible View of Life*, 1937; H. Wheeler Robinson (ed.), *Record and Revelation*, 1938; A. G. Hebert, *The Throne of David*, 1941; E. F. Sutcliffe, *The Old Testament and the Future Life*, 1944; C. Lattey, *Back to the Bible*, 1944; G. Campbell Morgan, *The Teaching of Christ*, 1946; R. K. Orchard, *The Message of the Bible*, 1947. See also Society for Old Testament Study. *A Scripture Bibliography*, 1936.

Bible Christians, a society founded in 1815 by William O'Bryan, or Bryant, who was a Methodist lay preacher. The name B. C. was given to the sect because they appealed only to the Bible for the doctrines which they taught. The society was founded at Shebbear, in N. Devon, and the ministrations of the Wesleys undoubtedly had great influence on the development of this sect. In these days they did not differ essentially from the Methodists in any point, but yet in the early days they suffered much even at the hands of the Methodists. The B. C. in 1907 joined with 2 other Methodist communities to form the United Methodists. These 2 other bodies were the Methodist New Connection and the United Methodist Free Churches. An Act of Parliament

sanctioning the fusion received the royal assent in 1907. Outstanding names in their denomination are those of O'Bryan, Thorne, and Billy Bray. In 1932 the United Methodist Church, having over 2200 churches, with a total membership of over 150,000, joined with the Wesleyan Methodist Church and the Primitive Methodist Church, and became 'The Methodist Church.'

Bible Communists, founded in 1848 by J. H. Noyes, and known as the Oneida Community. The primary object of the community was essentially religious. They practised not only community of property and life, but by means of a system called complex marriages, community of women also. In 1879 this system of complex marriage was discontinued, and 2 years later the movement was turned into a joint stock company. It has been successful financially, but with the abolition of the complex marriage system its only really distinct feature was banished.

Bible Societies, the name given to various associations which have as their chief work the translation and propagation of the Scriptures amongst all nations. Such societies became prominent about 200 years after the Reformation; but previous to the Reformation, and during the period immediately following the Reformation, we find the Scriptures being trans. and to a certain extent disseminated throughout Europe. That the Reformation and the doctrine that the Bible is the religion of the Protestants had a great influence on this movement cannot be denied. Before or during the eighteenth century we find the following societies formed: The Society for the Propagation of the Gospel in Wales, 1662; the Society for Promoting Christian Knowledge, 1698; the Dan. Society for Sending Missionaries to India, 1705; the Society for the Propagation of the Gospel in Foreign Parts, 1709; the Society for Promoting Christian Knowledge amongst the Poor, 1750; the Naval and Military Bible Society, 1780. All these societies had the same object in view—the spreading of Christian knowledge and the translation and propagation of the Gospels. In Germany various societies had been formed with the same object, and the society formed in 1792 for the Propagation of the Gospel in France was brought to an end by the Revolution. The evangelical revival of the eighteenth century naturally had a great influence on these societies, and led to the establishment of many new ones.

The British and Foreign Bible Society. This society was founded in 1804. It had its origin in the difficulty which the Rev. Thomas Charles of Bala found in the work of propagating the gospel in Wales, owing to the lack of Welsh Bibles. The society was therefore formed with the object of sending out copies of the Gospels trans. into the necessary languages to those countries where the need for them was felt. They were to be neutral as far as doctrinal translations were concerned, and were to help in the circulation of the

Holy Scriptures 'without note or comment.' The original society founded in London in the year already mentioned consisted of a committee of 36, 6 of whom were to be distinguished foreigners who lived in or near London, and the remaining 30 members were to be equally divided representatives of the Church of England and representatives of nonconformity. The society found support from all Christian bodies, and developed rapidly, having at the present day 6000 auxiliary societies in England and Wales, and over 5000 abroad. The society issues over 1,000,000 copies of the Bible every year, and the same number of Testaments, besides upwards of 10,000,000 portions of Scripture, including large quantities among the peoples of Asia. The number of languages into which the Bible, or parts of it, have been trans. is over 1000. The society has met with many difficulties, especially from its adhesion to the principle of the distribution of the Scriptures without note or comment, but it has in most cases been able to surmount its difficulties. One such trouble arose in 1831, when the society resolved to demand a belief in the Trinity as a condition of membership. Arising out of this the Unitarian Bible Society was created.

Other Brit. Bible societies which may be noticed briefly here are the Edinburgh Bible Society, 1809; the Glasgow Bible Society, 1812, which, owing to difficulties as to the form in which the Scriptures should be pub. by the Brit. and Foreign Bible Society, disassociated themselves from that body, and became in 1861 the Scottish National Bible Society. The Dublin Bible Society was founded in 1806, and afterwards, by amalgamation with kindred societies throughout Ireland, became the Hibernian Bible Society. It is associated with the Brit. and Foreign Bible Society, and contributes annually to the funds of that society. Amongst the more important of the European B. S. may be mentioned the Prussian Bible Society, 1814, originally started as the Berlin Bible Society in 1806; the Russian Bible Society (Revel), 1807; the Swedish Bible Society, 1814; and the Finnish Bible Society, 1813. Most of these societies found considerable support in the early days from the Brit. and Foreign Bible Society, and many continental societies have been bitterly attacked by Rom. Catholics. There are no Rom. Catholic Bible Societies, the Catholic *Encyclopædia* saying on the subject: 'The Church believing herself to be the divinely appointed custodian and interpreter of Holy Writ, she cannot, without turning traitor to herself, approve the distribution of Scripture without note or comment.' In this connection it is of interest to quote from the speech of the duke of Gloucester at the annual meeting in 1930 of the Brit. and Foreign Bible Society. After stating that in scattering the Scriptures no questions are asked about churchmanship, nor religious formulae dictated, he said the sole purpose of the society was to circulate one Book, and that without note or comment, for

interpretation is left to the Church. In America the Philadelphia Bible Society was founded in 1808, and gradually a number of societies grew up which by 1839 had all amalgamated into the Amer. Bible Society. The Amer. society is one of the most active of all Bible societies, distributing over 12,000,000 copies of the Scriptures every year, and translating these into nearly 300 different languages. The society is wealthy, and since its inception has distributed 100,000,000 copies of the Old and New Testaments. The Gideons, or Christian Commercial Men's Association of America, formed at Janesville, Wisconsin, in 1899, which claims to be the oldest interdenominational laymen's evangelical association in the world, began, in 1908, to place bibles in every hotel guest room and this work was followed in later years by distributions to hospitals and the armed forces. Nearly 2,000,000 bibles have been placed by the organisation since its inception.

Biblia Pauperum, a Lat. term meaning poor men's Bible, is the name which has been given in modern times to a series of MSS. and printed books which contain rude illustrations of biblical subjects, with a short explanatory text accompanying each picture. Very often these pictures represented events in the life of Christ, together with the corresponding prefigurations or types that occur in the O.T.; the text was in rhyming Lat. verse. On an antependium or altar-front in the Leopold Chapel of Klosterneuburg in Austria 15 scenes from the life of Christ were executed in enamels. Each scene was accompanied by 2 O.T. prefigurations, and the date of the work was 1181. The MS. at St. Florian, in Austria, dating from the early fourteenth century, is the first one known to contain a similar triple arrangement. The books which contain such pictures belong to the class of block-books (see BLOCK-BOOKS).

Bibliography is derived from the post-classical Gk. word βιβλιογραφία, which when first used, meant the writing of books, and was so used in France (*bibliographie*) till the eighteenth century, and in England till the nineteenth century. It was mainly owing to the Rev. T. F. Dibdin that the change was then made in England; Southey preferred the term bibliography, which has now dropped into desuetude. The early Fr. bibliographers considered that it came within their province to classify books from the point of view of their value as literature, their artistic excellence, etc. It is now recognised, however, that the proper function of B. is to suggest certain general principles of arrangement and their application. These principles are not many in number nor particularly abstruse, and the main requisite of any B. is that a definite idea should exist as to the use of the finished work. Thus one school of bibliographers has for its special study such subjects connected with books as the hist. of printing, book-collecting, book-binding, book-illustration, and other allied topics. The London Bibliographical Society, the Edinburgh Bibliographical

Society, the Grollier Club of New York, and other such institutions, are concerned with such subjects. In addition to the publications of the societies mentioned above, sev. periodicals have, at one time or another, been pub. to cater for persons interested. These periodicals, among which may be mentioned *The Bookworm*, 1888-94; *Bibliographica* 1895-97; *Le Livre*, 1880-89; and *Zeitschrift für Bücherfreunde*, 1897, have not as a rule been long-lived. Information may also be found in *The Library*, 1893, by Andrew Lang; *The Printed Book*, trans. from the Fr. of Henri Bouchot by E. C. Bignmore in 1890; *Connaissances nécessaires à un bibliophile*, 1899, 5th ed., by E. Rouveyre; *Best Books: a Reader's Guide and Literary Reference Book*, 6 vols., 1910-35, by W. S. Sonnenschein; *Guide to the Best Fiction*, 1932, by E. A. Baker and J. Packman; *Courses of Study*, 1932, by J. M. Robertson; *Literary Stock and Assistance to Readers* (a valuable guide to reference books), 1936, by L. R. and E. R. McColvin; *Three Thousand Books for a Public Library*, 1939, by W. A. Munford; *Cambridge Bibliography of English Literature*, 4 vols., 1940, by F. W. Bateson (ed.); and *The Bookman's Manual*, 1941, by Bessie Graham.

The usual definition of the science of B. is the science of books as such. It thus comprehends the subject and class of the work, the size, the pagination, the type, the plates, the rarity, etc. It will thus be seen that the ideal of bibliographical work is the provision in an accessible form of a comprehensive description of a copy of any book, possessing any typographical, historical, or literary interest, in its original form as first pub., and of any different issues of it. When such a catalogue has been compiled and verified, each individual work could be described by a simple reference. Such an ideal is, of course, impossible at the present time, owing to the enormous quantity of books already printed and being printed every year, and consequently bibliographers are obliged to restrict the scope of their catalogues to the special object for which they are required. Thus catalogues are found of the books of a certain author, e.g. Eblisch and Schiecking, *Shakespeare Bibliography* (1931); or of those pub. in a certain period, e.g. W. W. Greg, *Bibliography of the Eng. Printed Drama to the Restoration* (1939); or of those dealing with special subjects or with the literature of a particular country or countries, such as, for instance, the various book lists and readers' guides of the National Book League, and *Subject Catalogue of the Library of the Royal Empire Society*, by Evans Lewin, 4 vols., 1930-37. The standard description of any book generally consists of the following sections: (a) A transcript of the title-page, the colophon (if any), and any other distinguishing headings. (b) Description of the number of leaves in the book, the measurements of such leaves, and the different kinds of type employed, etc. (c) A description of the literary contents of the book and the extent thereof, etc. If any other point

not included in the above requires to be mentioned, as imparting some distinctive or necessary information about the particular work, it is put at the end of the above descriptions.

When a bibliographer wishes to describe a book, he examines it first of all to discover its origin, and to test the statements as to the publisher, etc., and to see if it is in perfect condition. Ultra-violet rays and chemical analysis are among the scientific aids in establishing whether a book of supposedly anct. origin is what it purports to be. It is also necessary for the bibliographer to satisfy himself that the type corresponds to the alleged date of the work, and whether any leaves have been inserted from another copy in order to supply omissions. This can be discovered by observing whether the 'signatures' of the folios correspond as they should do. The 'size' of a book is the relation of the size of the separate pages to the original sheet of paper of which they formed a part. Thus when the sheet is simply folded in two the book is in folio, when in four it is in quarto, when in eight octavo, or 8vo, etc.

Among the best-known general catalogues, etc., the following may be mentioned: *General Catalogue of the Library of the Brit. Museum*; Watt's *Bibliotheca Britannica*, 1824; *Subject Index of the Modern Works added to the Library of the British Museum in the years 1881-1900*, ed. by G. K. Fortescue, 3 vols., 1902-3; Heinsius's *Allgemeines Bücher-Lexikon*; Kayser's *Index Locupletissimus Librorum*; Quérard's *La France littéraire*; and the *Short Title Catalogue of Eng. Books*, 1475-1640, pub. by the London Bibliographical Society in 1926.

Among notable bibliographers are the following: Thomas Frognal Dibdin (q.v.); Sir Samuel Egerton Brydges (q.v.), who pub. *Censura Litteraria*, 1805-9, and *The Brit. Bibliographer*, 1810-14; Robert Watt, whose *Bibliotheca Britannica or a general index to Brit. and Foreign Literature*, 1824, is the earliest outstanding bibliographical work produced in Scotland; William Thomas Lowndes (q.v.), whose *Bibliographer's Manual* (1834) was revised and enlarged by H. G. Bohn; Ludwig Hain's *Repertorium Bibliographicum* (1826-38) and Dr. Copinger's *Supplement to Hain* (1902); Henry George Bohn (q.v.), whose *Guinea Catalogue of Old Books* (1841) is a valuable early bibliographical work; William Carew Hazlitt (q.v.), author of sev. series of *Bibliographical Collections and Notes* (1876-89) and of a *Handbook to the Popular, Political, and Dramatic Literature of Great Britain*, etc. (1867); Bernard Quaritch (q.v.), whose *General Catalogue of Old Books and MSS.* appeared in 1887-89; R. B. McKerrow, a joint secretary of the Bibliographical Society, and author of an *Introduction to Bibliography for Students*, 1927; and Melvil Dewey, the Amer. librarian who originated the decimal system of classification for library cataloguing.

Bibliomancy (Gk. βιβλίον, book, and μαντεία, prophecy), name given to a

method of obtaining prognostics of the future. The procedure is as follows: The person wishing to obtain information opens the book at random, and then endeavours to apply the passage displayed to the particular case. The book usually chosen now for the purpose is the Bible; the ancients used Homer or Virgil, the process being then termed *sortes Homerice* or *sortes Virgilianæ*.

Bibliothèque Nationale, the Fr. national library in Paris. There is mention of a collection of MSS. by Charlemagne, but the most famous of the early collections is that of Charles V. The library has had many homes, as, for example, at Fontainebleau under Francis I. and later in Mazarin's palace. The Hôtel Tubœuf No. 8, destined with adjoining mansions to become the B. N., was, it is said, staked at the gambling table and won by Mazarin. The vast mansion he built on the site was divided among his heirs and in its different parts was put to various uses till, in 1721, it was bought by the Crown. The king's library was then taken there from the rue Vivienne, where it had been placed in 1666, and opened to the public. The modern part of the building, dating from 1854, has been reconstructed in recent times and enlarged. The chief entrance to the library is in the rue de Richelieu.

The Petite Librairie of Louis XI. was the true embryo of the actual B. N., or what has been successively the Bibliothèque Royale, Bibliothèque Impériale, and now the B. N.; but the B. N. owed its first real impetus to Napoleon, who increased the gov. grant; and at the opening years of the nineteenth century it had 500,000 printed vols. and 80,000 MSS., besides a great many engravings which Napoleon had taken from conquered cities. Numbers of these acquired treasures, however, were returned after the fall of Napoleon.

Acquisitions, gifts, sometimes confiscations, state seizure of the estates of émigrés or of the clergy during the Revolution, and, finally, the *dépôt légal* or regulation by which Francis I. compelled every printer to deposit a copy of every book issuing from the press, swelled the royal library enormously, so that from a few hundreds of vols. it has to-day grown to nearly 6 million printed books, 123,000 MSS., 3,500,000 stamps, maps, periodicals, music, engravings, and works of art of various kinds connected with letters, and a considerable number of coins, tokens, and medals. From last century the importance of the collections determined their div. into 5 depts.: Printed Books; MSS.; Stamps; Music; Medals. The Dept. of Printed Books is the one that occupies the most space. In the time of the second empire it was found necessary, in order to house so large a collection, to instruct the architect, Labrousse, to transform the old premises of the library, comprising at that time a part of the Mazarin palace, the hôtel de Nèvers, and those of Chivry and Tubœuf; and it was then that Labrousse built his reading hall, one of the earliest rustic architectural works to be produced in France, and one

of the most successful. The ceiling of the Galerie Mazarin is covered with splendid frescoes by Romanelli. The heart of Voltaire is said to be encased in the statue to be seen there. It is impossible in a short article to give even a brief sketch of all these collections even while limiting it to the most important. But the following are among the rarest items in the Dept. of Printed Books or Département des Imprimés: A Gutenberg Bible dated by the binder; a Theophrastus with *ex-libris* autographed by François Rabelais; a copy of Pascal's *Pensées* anterior by one year to the first edition, and not carrying the corrections authorised for that edition; a book, which belonged to Racine, adorned with sev. portraits of the great writer drawn in crayon by his son Louis; numerous prints on vellum with illuminations (see ILLUMINATION OF MANUSCRIPTS) and miniatures in the style of medieval MSS.; luxury works reserved for monarchs, one of which is adorned with a portrait of Charles VIII.; and also, rare curiosity indeed, the sole copy of the book *Christianisme restitué* by Michel Serret, snatched from the stake to which he and his work had been condemned by Calvin.

After the First World War, with the fall of the franc, the library was faced with economic difficulties, but by amalgamating with other Parisian libraries under a council of management and securing legislative action in the matter of holding funds and acquiring books, the situation was restored.

Bibra, Baron Ernst von (1806-78). Ger. writer, travelled in Brazil, Chile, and Peru, and brought home good natural hist. and ethnological collections. He pub. the results of his explorations in *Reisen in Südamerika*, 1854, and also wrote works on chemistry and novels remarkable for their excellence of description.

Bibulus, Marcus Calpurnius, consul with Julius Cæsar in 59 B.C. His efforts to oppose Cæsar's agrarian law and other democratic measures being futile, he excited ridicule by spending 8 months of his consulate shut up in his own house. As proconsul of Syria he further displayed his incapacity. He d. about 82 B.C.

Bilbury, a picturesque old vil. in Gloucestershire, England, in the Cotswold Hills, about 7 m. N. of Cirencester. Pop. 600.

Bicarbonate, an old name for acid carbonate. The gas carbon dioxide (CO_2) when dissolved in water is looked upon as carbonic acid, which may be represented as H_2CO_3 . If both hydrogen atoms are replaced by a metal, the resulting compound is called a carbonate, as sodium carbonate, Na_2CO_3 ; but when one hydrogen atom only is replaced, the result is a bicarbonate, as sodium bicarbonate, NaHCO_3 , the name being due to the fact that the proportion of the carbonic acid group to the amount of sodium is doubled. The term bicarbonate usually refers to bicarbonate of soda, which is useful medicinally as a gastric sedative and antacid. **See SODIUM AND SODA.**

Bice, name of two pigments, of blue and green respectively. In the natural B., formed with clay mixed with yellow ochre, the blue and green colours are due to the carbonate of copper in the B. The artificially manufactured B. is not so durable as the natural. B. is known to artists under various names, but its use is dying out. The etymological origin of the name is obscure.

Biceps (Lat., from *bi*, two, *caput*, head), anatomical term meaning two-headed. It is used to denote two muscles of the human body, one of the arm, the other of the leg. Each has two 'heads' or points of origin. The former, the B. flexor cubiti, is the muscle on the upper arm, which serves to flex the elbow; the B. flexor crucis extends along the whole of the back of the thigh and flexes the knee. In popular use biceps generally denotes the muscle of the arm.

Bicester, mrkt. tn. of Oxfordshire and the seat of the county courthouse, situated 12 m. N.N.E. of Oxford. The ruins of a Rom. settlement lie at a distance of a mile and a half to the S.W. of B., on the Ake-man Street of the Romans. Fairs are held annually in the tn., at Easter, in June, in Aug., at Michaelmas, and in Dec.; there are manufs. of rope, clothing, and pale ale. Pop. 3000; (rural dist., 9500).

Bicêtre, a noted hospital of Paris, situated on an eminence on the S. side of the city. Founded by Louis IX. as a Carthusian monastery, it was in the possession of John, bishop of Winchester, in 1290, hence the name of B., a corruption of Winchester. Destroyed in 1632, it was rebuilt, and, after having been a hospital and a prison, became a home for indigent old men and incurable lunatics.

Bichat, Marie François Xavier (1771-1802), Fr. anatomist and physiologist. In 1797 he was appointed lecturer in anatomy, surgery, and experimental physiology at the Hôtel-Dieu, and in 1800 he was made physician. He is regarded as the founder of general anatomy. His chief works are *Traité des membranes*, 1800; *Recherches sur la vie et la mort*, 1800; *Anatomie générale, appliquée à la physiologie et à la médecine*, 1801.

Bichromate Cell, a voltaic cell in which the electric current is associated with the chemical action of a mixture of potassium bichromate and dilute sulphuric acid upon zinc. The mixture is contained in a bottle-shaped vessel in which a zinc plate fixed to a brass rod is placed between two carbon plates. When the cell is not in use the brass rod should be raised and secured by a screw so that the zinc is clear of the exciting liquid. The electromotive force of the cell diminishes rapidly after a short time, so that it is not used in batteries where a current is needed for long periods.

Bickerdyke, John, pseudonym of Charles Henry Cook (1858-1933), Eng. writer, b. in London; educated at Baden-Baden and Cambridge Univ. In 1880 he became a barrister of the Inner Temple. His works were mainly on sporting subjects, and include *Sea Fishing in the Badminton Library* (1895), *Wild Sports*

in *Ireland* (1897), and *The Book of the All-round Angler* (1923).

Bickerstaff, Isaac, pseudonym adopted by Dean Swift, when in 1709 he pub. the pamphlet burlesquing Partridge, the almanac-maker, whose death he solemnly foretold and proved.

Bickerstaffe, Isaac (c. 1735-c. 1812), dramatic writer, in early life a page to Lord Chesterfield when lord Lieutenant of Ireland; produced, between 1756 and 1771, many dramatic pieces, which had considerable popularity, the best known of which are *Love in a Village* (1672) and *The Maid of the Mill* (1765). Owing to misconduct he was dismissed from his post as an officer in the Marines, and had to flee the country. The remainder of his life seems to have been passed in penury. The exact date of his death is unknown.

Bickersteth, Edward (1786-1850), Eng. clergyman of the Church of England, b. at Kirkby-Lonsdale, Westmorland. He was a solicitor at Norwich from 1812 to 1815, but later took holy orders, and became a rector in Herts, and secretary of the Church Missionary Society. His *Christian Psalmody* (1833), comprising 700 hymns, ran to over 50 eds. and was the basis of the *Hymnal Companion* compiled by his son, the Bishop of Exeter.

Bickersteth, Edward (1850-97), Eng. missionary of the Church of England, grandson of above, b. at Banningham, in Norfolk. He went to Delhi in 1877 to be the first head of the Cambridge Mission there, which he founded. He returned to England in 1882, and was made rector of Framlingham, Suffolk, where he remained till 1886. In the latter year he went to Japan, and was made bishop of S. Tokyo. He worked in Japan till 1896.

Bickerton, Sir Richard Hussey (1759-1832), Eng. admiral. He took part in 1781 in the action between Hood and de Grasse off Martinique. In 1799 he was made rear-admiral, and from 1804 to 1805 was with Nelson in the Mediterranean before Trafalgar. Later he was commander-in-chief at Portsmouth.

Bicycles, see CYCLES.

Bickley, residential dist. of Kent, England, 12 m. from London, and near Bromley.

Bida, the fortified cap. of Nupe in N. Nigeria, W. Africa. The Niger flows 20 m. S. Elevation, 450 ft. B. was taken by Col. F. S. Lugard (see LUGARD, LORD) in 1903 in his campaign against the N. emirates, whose sultans would not give up slave-trading without a fight. Pop. 100,000.

Bidar, tn. of India, in the state of Hyderabad, 75 m. N.W. of the state cap., Hyderabad. It is noted for manufs. of Bidri ware, which are made of an alloy of tin, copper, lead, and zinc. Pop. 29,000.

Bidasoa, riv. which rises in the mts. round the valley of Baztan in Sp. Navarre, and flows into the bay of Biscay at Fuenterrabia, after a course of 33 m. It forms the boundary between Spain and France, and was the scene of sev. battles in the Peninsular war.

Biddeford, city in York co., Maine, U.S.A. Has large cotton manufs. It stands on the Saco, which supplies power for factories. Pop. 19,700.

Bidder, George Parker (1806-78), Eng. engineer, was carried round the country as a 'calculating phenomenon,' until someone, interested in his extraordinary powers, educated him at a Camberwell school and Edinburgh Univ. He was the inventor of the swing bridge for railways, and the founder of the Electric Telegraph Company, which was the first of its kind. Victoria Docks was his greatest engineering achievement, but his claim to renown rests rather on his faculty for rapid, accurate, and elaborate calculation.

Biddery Ware, see under BIDAR.

Bidding-prayer (O.E. *biddan*, to pray), the exhortation to prayer which is said in England in cathedrals, at univ. sermons, in the Inns of Court, and elsewhere on special occasions. Such prayers are to be found in anct. Gk. liturgies, and in Gallican and pre-Reformation liturgies of England. The main characteristic of the B. is that it informs the congregation of the object for which they are to pray. It ends with the Lord's Prayer. The B. is commanded to be used before every sermon, lecture, or homily in the canons of the Church of England of 1603; save in the places above mentioned, a collect is now generally substituted. Forms of Bs. which have been used at various times, from the eleventh to the fifteenth century, have been collected in the *Manual*, *Rituale*, 1874, of the Sarcee Society. For further information on the subject, see the *Bidding of Prayers before Sermons*, written by Wheatley in 1845.

Biddle, John (1615-62), 'the father of Eng. Unitarianism,' was b. at Wotton-under-Edge, Gloucestershire. In 1645, he pub. his *Twelve Questions or Arguments*, against the deity of the Holy Spirit. He was imprisoned, but next year pub. his *Confession of Faith touching the Holy Trinity*, etc., and he followed this by a tract bringing the fathers of the Church to support him. In 1655 B. was banished to the Scilly Is., where he stayed for 3 years. After the Restoration, he was again brought to trial, and fined heavily. He was unable to pay, and so was sent to prison, where he d. See his life by J. Toulmin, London, 1791.

Biddulph, urban dist. of Staffs., England, 4 m. from Congleton by rail. Pop. 8500.

Bideford ('by the ford'), seaport of N. Devon, England, 8 m. S.W. of Barnstaple. It is situated on both sides of the Torridge, 3½ m. above its confluence with the estuary of the Taw, and an old bridge of 24 arches unites the 2 divs. of the tn. Vessels of 500 tons burden can come to the quay. B. had formerly a very extensive trade, and is known as the starting-place of Sir Richard Grenville's last voyage, whilst it also figures prominently in Kingsley's *Westwood Ho!* Its manufs. are ropes, sails, earthenware, leather, etc. Pop. 9000.

Bidens, genus of Compositæ, of which 2 species, the bur marigolds, are common to

Britain. It received its name from 2 bristles which frequently surmount the angles of the fruit and serve in its distribution. The Brit. species, *B. tripartita* and *B. cernua*, grow in wet places, while *B. beckettii* is an Amer. water plant.

Bidloo, Godefrid (1649-1713), Dutch anatomist and surgeon, b. at Amsterdam, d. at Leyden. For some time he was prof. of anatomy at The Hague, and later occupied the same position at Leyden, where he also taught chem. He was physician to William III. of England. His chief work is the *Anatomia corporis humani*, an elaborate treatise on anatomy in Lat., pub. in folio at Amsterdam, 1685. It is adorned with 105 plates by G. de Lairese. These plates were the cause of controversy with George Cowper, a London surgeon, who had stolen them and used them as his own.

Bidpai, or **Pilpay**, a legendary Indian philosopher, to whom a famous collection of E. apologies known as *The Fables of Bidpai* were once attributed. According to tradition, this B. (the title, derived from the Sanskrit, means master of knowledge), lived under a king called Dabshelin, by whom he was imprisoned, because of his free condemnation of the royal tyranny. He was later released to discuss the affairs of the kingdom, and was then commanded to write down his advice in Sanskrit in fable form. The fables early became popular, and the news of them having reached Persia, the King Khosrû Anushirvan (A.D. 531-79) sent Barzoi, his court physician, into India to make a collection of them, and to translate them into Pahlavi. The physician made this trans. under the title *Kalilah and Dimnah*, from the names of 2 jackals in the Sanskrit version. From the Pahlavi, a translation into old Syriac was made, and the same version was again made the basis of a more important translation about A.D. 750. Then Abdullah-ibn-al-Mokaffah turned it into Arabic, and it was from this version that the fables were trans. into most of the European languages. The chief sources of the *Fables of Bidpai* are the *Pancha Tantra* and the *Hitopadesa*. The stories, which made animals speak and reason as human beings, are didactic in aim, their purpose being to infuse Buddhist doctrine, in the same way as do the *Jatakas*, or birth stories, of the Buddha, with which the fables have much in common. The fables were trans. into Heb. by the Rabbi Joel, and from this work was trans. the *Directorium Vitæ Humanæ* of John of Capua, a converted Jew. This was trans. into It., and from the It. into Eng. by Sir Thomas North, 1570. They have been about 20 Eng. translations during the last century. See J. G. N. Keith-Falconer's *Kalilah and Dimnah*. Cambridge, 1895.

Bidri Ware, see under **RIPAR**.

Bieberstein, Adolf Marshall, Baron von (1842-1912), Ger. diplomatist, b. in Baden and educated at Heidelberg and Berlin. He held sev. administrative posts in the Grand Duchy of Baden, following Prince Bismarck as state secretary

for foreign affairs. He acted as the mouthpiece of the 'good Ger. conscience' at the Hague Conference of 1907. As the Ger. delegate there he declined to accept Great Britain's proposal to restrict the use of mines; and he claimed the right to destroy neutral shipping and fishing fleets 'if that were necessary.'

Biedermann, Friedrich Karl (1812-1901), Ger. historian and politician, b. in Leipzig, Sept. 25. Was a president of the National Assembly held at Frankfurt, 1848, and which made him one of a deputation to Berlin to urge the king of Prussia to constitute himself Ger. Emperor. He took a leading part in Saxony in the movement in favour of the unification of Germany. Elected to the Reichstag, 1871-74. D. at Leipzig, Mar. 5, 1901. His most important historical works are: *Erinnerungen aus der Paulskirche*, 1849; *Deutschland im 18. Jahrhundert*, 1854-80; *Friedrich der Grosse und sein Verhältnis zur Entwicklung des deutschen Geisteslebens*, 1859; *Geschichte Deutschlands*, 1815-71, 1891; *Deutsche Volks- und Kulturgeschichte*, 1901. Plays: *Kaiser Heinrich IV.*, 1861; *Kaiser Otto III.*, 1863; *Der letzte Bürgermeister von Strassburg*, 1870.

Biel, the Ger. name of **Bienne**, a tn. in the canton of Bern, Switzerland, 20 m. N.W. of that city. Overlooked by the Jura, it is pleasantly situated on the lake of Bienne. Gardens and villas encircle the tn., which is composed of an old quarter and a modern quarter, the one semi-medieval in its irregularity, the other modern in its regular elegance. From 1262 to 1352, B. belonged to the bishops of Basle; in 1352 it was allied to Bern, and was a free and independent city until 1798, when France obtained it, but in 1815 it was again united to Bern. Its industries are watch-making, cotton-spinning, cigar-making, tanning, and dyeing. Pop. 35,000.

Biele, Wilhelm, Baron von (1782-1856), Ger. astronomer, devoted his life to the fine arts and to astronomy. He is famous because of his discovery of a comet, which bears his name. This comet, after appearing in 1772 and 1805, was seen by B. at Johannsburg in 1826, 10 days before Gambart saw it at Marseilles. Its return in 1832 caused widespread alarm, as it was believed it would strike the earth.

Bielaya, riv. of Russia, some 500 m. long, rising in the Ural Mts. in the gov. of Orenburg, joins the Kama.

Bielefeld, walled tn. in the Ger. prov. of Westphalia, 27 m. S.W. of Minden. Pop. 122,000. The tn., which dates back to the eleventh century, is picturesquely situated on the small R. Lutter at the foot of the Teutoburger Forest. The anct. walls, which withstood their last siege in 1673, were converted into broad promenades. The old castle of Sparenburg is the most notable building. The colony of Bethel is situated at a distance of 7 m. from the tn. This began as a home for people subject to epileptic fits, but later included houses for the training of deacons and deaconesses, and a workmen's home. The tn. is the

centre of the linen industry of Westphalia. There are also large bleaching-grounds, and the bleaching industry is very active. Other manufs. include silk, velvet, sewing-machines, leather, damask, soap, and meerscham pipes. On July 5, 1941, during the Second World War, the tn. suffered a heavy air attack, and on Mar. 7, 1945, R.A.F. Bomber Command used bombs of 10 tons for the first time in the war, the target being the railway viaduct at B. B. was the birthplace of Horst Wessel, who was killed in a brawl and became the subject of the Nazi propaganda song. A huge cairn was erected at B. in his memory and this was demolished by the Royal Engineers in May 1946.

Bielena, tn. of Yugoslavia, near R. Save, 75 m. N.E. of Sarajevo. Pop. 10,000.

Bielew, or **Bieloff**, tn. of the R.S.F.S.R., on the R. Oka, 160 m. S.S.W. of Moscow. It is an old tn., and has 14 churches and sev. convents. It became in 1468 the cap. of a vassal principality of Lithuania, but was captured by the Russians in 1494. It has a trade in grain. Pop. 10,000.

Bielgorod, see BELGOROD.

Biella, tn. in the prov. of Novara, Italy, situated on the R. Cervo, 33 m. N.E. of Turin. It has been noted for the manuf. of woollen stuffs for many hundred years, and is the see of a bishop. Corn, rice, and hemp are grown. Pop. 26,000.

Bielostok, see BIALYSTOK.

Bielsk, tn. of Poland, in the prov. of Grodno, situated 112 m. N.E. of Warsaw. It was the scene of a Polish victory over the Russians in 1831. Pop. 5000.

Bielski, **Martin** (1495-1576), Polish chronicler. His *Kronika Polska* was the first book of chronicles written in the Polish language, and is the first important hist. of Poland. The work, which is still valued, was continued by his son.

Bielsko, or **Bielitz**, tn. in Polish prov. of Cracow. The dist. is one of the most important centres in Poland. There is a great cloth industry. Pop. (1939) 20,000.

Bieltsi (Rumanian *Baltsi*), tn. of the Moldavian S.S.R., on the direct line of railway from Czernowitz to Odessa, and about 80 m. from Kishinev. There are brickworks and soap factories, also a trade in cattle and horses. Pop. 10,000.

Bienne, see BIEL.

Biennials, name given to plants which require 2 seasons of growth to produce their flowers and fruit, and differ from anns. only in this fact. In the first year they produce only vegetative shoots, in the second, flowers, fruits, and seeds, after which they perish.

Bienteveo, see BENTIVO.

Bienville, **Jean Baptiste LeMoyne** (1680-1768), Fr. governor of Louisiana, b. at Montreal, Canada. He founded New Orleans in 1718, and estab. there the seat of the gov. He was obliged to return to France (1724) to answer accusations made against him; but he returned (1733) as lieutenant-general. He failed in a number of expeditions against the Indians and was recalled in disgrace. He d. in France.

Bierce, **Ambrose**, Amer. author, b. in Ohio, 1842, son of a farmer, and the youngest of 12. He enlisted in the Union Army at the outbreak of the Civil war, 1861. After distinguished service he was invalided out in 1865. He then joined his brother Albert in San Francisco, and found his entry into journalism. In 1872 he came to London, and was on the staff of *Pan* for 4 years. Under the pseudonym 'Dod Grile' he collected 3 vols. of his journalistic ventures. From 1876 to 1897 he was in journalism in San Francisco. In 1891 his first book of stories, *Tales of Soldiers and Civilians*, was pub., notable for his capacity to see war in all its horrors. In 1913, he left Washington for Mexico, where civil war was in progress. A last letter was received from him in Dec., saying he was attached to Villa's army. Nothing is known beyond that date. One story states that he was shot by Villa himself. His books include: *Cobwebs from an Empty Skull*, 1874; *The Monk and the Hangman's Daughter*, 1892; *Can Such Things Be?*, 1893; *Fantastic Fables*, 1899; *The Cynic's Word Book*, 1906; *The Shadow on the Dial*, 1909.

Bierley, **North**, township in the E. div. of the W. Riding of Yorkshire. It forms part of the city of Bradford, and it has coal and iron resources. Pop. 16,000.

Bier's Congestion Treatment, a method of dealing with certain diseases by inducing an increased supply of blood in the part affected. Strictly speaking, the congestion treatment refers to the method consisting of the retention of venous blood, but Dr. Bier's name has also been associated with certain methods for increasing the supply of arterial blood. His general name for the latter treatment is the artificial production of active hyperemia, as opposed to passive hyperemia artificially produced, which includes all methods of hindering the departure of the venous blood from the part affected. Both treatments are based on the principle of assisting nature by increasing the supply of the blood, and consequently of those agencies whose function it is to resist and overcome the disease producing elements in the particular part of the body affected. The prin. method of producing active or arterial hyperemia is the application of heat. (See also AEROTHERAPEUTICS.) The apparatus used by Dr. Bier and his assistants for this purpose consists of hot-air boxes adapted to enclose the different extremities, the openings being well packed with fireproof asbestos cotton. The source of heat is a Bunsen burner or a spirit lamp which may be regulated. A thermometer is fitted to the box so that the temp. may be continually under observation and moderated if necessity arises. The usual effect of the treatment is to produce a copious perspiration, which must be appropriately dealt with when the application is discontinued. The treatment should only be adopted on the advice of a physician experienced in aerotherapeutics, as it entails considerable demand upon the general strength; and in women has produced irregularities and abnormalities

in menstruation. For these reasons, Dr. Bier developed a passive or venous hyperæmia treatment, where the object to be attained is the retention of blood in the affected part for a longer period than the normal. Under properly supervised conditions, the Bier treatment has proved very successful.

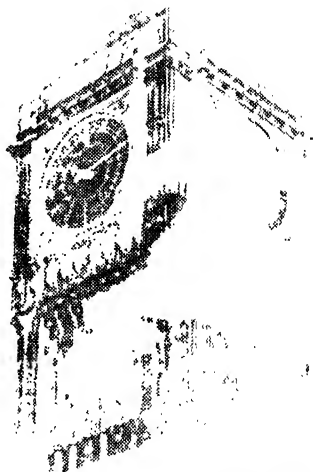
Bierstadt, Albert (1830-1902), Amer. artist, b. at Solingen, near Düsseldorf, but at the age of 2 was taken to America by his parents. He returned later to Europe and studied at the academy of Düsseldorf 1853-57. Returning to America he took part in General Lander's expedition across the Rocky Mts. As a result of this trip his picture of 'Lander's Peak' attracted attention at the Paris Exposition of 1863. B. was a landscape painter who, with Swain Gifford, Thomas Moran, and Edward Gay belonged to the middle period, and reflected the traditions of the Hudson R. school to some extent.

Biga, see **BIGHA**.

Bigamy. In Eng. law, by the Offences against the Person Act, 1860, sec. 57. 'Whosoever, being married, shall marry any other person, during the life of the former husband or wife, whether the second marriage shall have taken place in England or Ireland or elsewhere, shall be guilty of felony, and being convicted thereof, shall be liable to be kept in penal servitude for any term not exceeding 7 years'; but no offence is committed: (1) If the second marriage is contracted by a person not a Brit. subject outside England and Ireland; (2) If the former husband or wife has been continually absent for 7 years, and is not known to be living by the person marrying a second time; (3) If the first marriage has been dissolved by a divorce or a decree of nullity; (4) If there was a *bona fide* belief based on reasonable grounds that the former husband or wife was dead. To support a charge of B. a valid first marriage must be proved; thus if a man marries a woman while his first wife is alive and after the first wife's death marries a third, the last marriage is not bigamous, for his second marriage was a nullity. In Scotland, by the statute of 1551, the offence is one of perjury; at common law B. is punishable as an offence with imprisonment.

In U.S.A. law the statutory provisions of the various state criminal codes against B. or polygamy (q.v. as to Utah) are for the most part copied from the statute of 1803 (replaced by the Criminal Law Consolidation Act, 1861). The various exceptions to this statute are likewise practically the same in the Amer. Acts, e.g. continuous absence of former spouse for a space of 5 years, without being heard of; dissolution of former marriage by the decree of a competent court, etc. The punishment for the offence differs in different states. In case the prior marriage was made abroad, the prosecution must show that such marriage was valid by the law of the country where it was made. The second marriage must be within the jurisdiction; if in a foreign state it is not B. Again, the second

marriage need not be a valid one. Even though the first marriage be contracted under any of those disabilities or impediments which render it *voidable*, yet a second marriage, whilst the former is in fact subsisting, comes within the criminal law, for the first is a marriage in legal theory until it is avoided. But if the first marriage were contracted under disabilities or incapacities which rendered it *void ab initio*, the case is otherwise.



John H. Stone

BIG BEN'S CLOCK TOWER

The sculptured horse is part of the Boadicea statue group at the north end of Westminster Bridge.

In Maine, Pennsylvania, and other states, the defendant's admissions as to a former marriage may be given in evidence against him, but apparently this is not so in Massachusetts, Connecticut, and a few other states. Consummation is not necessary to the validity of either marriage. The fact, if so, that polygamy is allowed by any religious creed is not even in Utah a defence in law to a charge of B. As in England, so in U.S.A., a woman who, having a husband living, marries another person, is guilty of B., even though her husband has voluntarily withdrawn from her and remained both absent and unheard of for any period less than 7 years, and even though she honestly believed him to be dead at the time of her second marriage.

Bigelow, Erastus Brigham (1814-79), Amer. inventor, contrived, whilst still a boy, a loom for weaving suspender webbing and piping cord. His other inventions were a machine for making knotted counterpanes and a power-loom for the

carpet weaver, which reduced the cost of carpet manu.

Bigelow, Jacob (1787-1879), Amer. physician and botanist, graduated in 1806 at Harvard Univ. where he was afterwards prof. in more than one capacity. For more than 40 years he practised medicine in Boston. His title to renown rests on his original research in botany, as well as on his introduction of single-word nomenclature in the *American Pharmacopœia*, 1820.

Bigelow, John (1817-1911), Amer. journalist and statesman, b. at Malden, New York. From 1849 to 1861 he was managing editor and, with William Cullen Bryant, joint owner of the New York *Evening Post*. Amongst the offices which he filled in his political career were those of United States consul at Paris 1861-64, minister to Franco in 1864-67, and secretary of state for the state of New York, 1876-77. His best work is his ed. of Franklin's *Autobiography and Complete Works*, to which he added notes based on personal knowledge. See Margaret Clapp, *Forgotten First Citizen: John Bigelow*, 1946.

Big Ben, the great bell in the clock tower of the Houses of Parliament, Westminster. It was so named after Sir Benjamin Hall, who was first commissioner of works in 1856 when it was installed. It cost some £40,000 and weighs 13½ tons. A light is displayed from this tower when Parliament is sitting.

Big Game. The pursuit of the larger fauna has had a fascination for men in all ages; anct. cave-dwellers, Assyrian kings, and modern sportsmen have all taken pleasure in hunting, and in recording their adventures. But to-day, instead of finding the bear, elk, or aurochs close at hand, the European hunter must go far afield if he desires to pursue large game. Even in Africa things have greatly changed. When the Great Trek took place, and long after, there were vast regions in S. Africa where lions and buffaloes were numerous, but now only small game can be found; the larger animals have retreated, and long journeys with horse and ox-wagon are needed to get into their neighbourhood. Then follow days of stalking with native trackers. All this means expense, hard work, and often privation; a Cape wagon and team may cost £200 or more, or can be hired at perhaps £30 per month; horses, unsaddled, are fairly cheap, but if saddled, are cheaper at three times the price. Drivers and horse-boys must be hired, and provisions and medicine taken in good quantity. In E. and Central Africa native carriers are necessary, also native hunters, and in swampy dists. all the work must be done on foot, which involves great fatigue and almost a certainty of sickness. For Central and E. Africa the best start will be by rail to Mafeking or beyond, or by sea to Beira, for the lower Zambesi, or to Mombasa for Brit. E. Africa. The animals to be found include the lion, elephant, hippopotamus, rhinoceros, giraffe, buffalo, eland, and

many species of antelope. Lions are especially plentiful in Brit. E. Africa and the Congo State, as also elephants and rhinoceros. Herds of buffalo were once frequent in Cape Colony, but have been killed off or driven N.; they were greatly thinned also in 1890 by a kind of rinderpest. They are now to be found mostly among the swamps of the Zambesi and Limpopo, and hunting them is difficult and dangerous. A wounded buffalo will hide and try to surprise the hunter, and even a 'dead' one must be approached with caution. There are close times for shooting, varying in the different states, and licences run from a few shillings for small game up to many pounds for the larger animals. India has always been famous for its wild animals, but money and, above all, influence are necessary for enjoying the best sport. Without these one might spend many months in a tiger country and see nothing, but with them India affords splendid chances. There is an immense variety of game, tigers, panthers, leopards, a few lions, wild boar, rhinoceros, and buffalo, besides deer and gazelles, from the lordly sambur downwards. The tigers are unmatched elsewhere; one was shot which measured 10 ft. 22 in. in length, including tail, and weighed 540 lb. Even the cubs at a year old are 4 or 5 ft. in length. Tigers are to be found in many parts of India, but especially in the Terai jungles (along the foot of the Himalayas), and in the Sunderbunds. They are generally shot from elephants, but sometimes from trees, towards which they are driven by beaters. Lions are now only found in the W.; they are sometimes very large, quite equal to those of Africa. Panthers and leopards are numerous: the snow leopard of the Himalayas is one of the finest prizes a sportsman can secure. Rhinoceros are found in the Terai and the Sunderbunds, and the gaur, or Indian bison, in the Sâtpurâ and other mt. ranges. One of the most noted sports of India is 'pig-sticking,' i.e. hunting the wild boar on horseback with spears. This always takes place over rough country, and requires pluck, hard riding, and dexterity; a wild boar at bay is a dangerous opponent. The Indian buffalo, living in swampy dists. overgrown with tall reeds, has to be hunted on elephants, but sometimes in the Central Provinces the reeds are set on fire, after which the buffalo may be pursued on foot. The quarry itself is somewhat dangerous, but malarial fever is more to be dreaded. Up in the Himalayas those who enjoy the toilsome delights of mountaineering may stalk the markhor, ibex, and wild goat; brown and Himalayan bears also, and snow leopards, are sometimes met with. At a great altitude (10,000-17,000 ft.), the bharal, or blue wild sheep, needs expert stalking, and furnishes excellent mutton. Pamir sheep are said to stand 4 ft. high, and weigh over 400 lb., and the argali, or *Ovis ammon* of Tibet (of which there is a specimen at S. Kensington), is nearly as large as a donkey. Burma also affords plenty of sport, its fauna including the

elephant, rhinoceros, tiger, and leopard, besides innumerable deer. Elephant-shooting, however, is strictly prohibited both here and in India. Good shooting may be had in some parts of Europe, especially Russia, Scandinavia, and the Alps. In the former wolves and bears are plentiful, and their skins are prized. Bears are sometimes tracked down, about Nov., to their winter hiding-places and not infrequently the tracker, having located sev., goes off to the city and sells his discovery to some sportsman. Then after a sledge journey of many days, the hunter, with his guide and probably a dog, has a long tramp over the snow to the place of hibernation. The animal is waked out of his sleep, comes out with a rush, and either bolts or charges his assailants. Further S., in the Caucasus, wild boars abound on the lower slopes, and bears and bison also are found. Higher up there are chamois, ibex, and other mt. game; but though sport is plentiful, it is expensive, and involves much difficult mountaineering. Bison are also found in Lithuania; they are often called aurochs, but this is not correct, the true descendants of the anct. aurochs being the wild white cattle of Chillingham, Northumberland. A Caucasian wild bull has been killed which stood 6 ft. high, was 10 ft. 1 in. in length (without including tail), and 8 ft. 4 in. in girth. Chamois and ibex are stalked also in Switzerland, the Tyrol, the Carpathians, and the Pyrenees. In Scandinavia the brown bear is hunted by men on skis, with hounds in leash. The bear has keen scent, but poor vision, and keeps to windward if he can; when cornered, he is dangerous, and not least so when apparently dead. Bears in Norway are now scarce. In our own is. the only large wild animals left are the red deer of Scotland and Exmoor, and the Chillingham herd of white cattle, the last representatives of the anct. quarry of the men of the Stone Age. Bears and wolves lingered longer in Scotland than in England; there is a record of a fierce bear being killed by one of the Gordons in the eleventh century, and wolves are said to have been numerous and destructive down to the sixteenth century. In N. America the hunter may find abundant sport, though the great herds of bison have vanished from the prairies; they were mainly slaughtered by the Indians. After they found they could sell their 'buffalo-robies' to white men, they slew at a great rate. The last big herd was destroyed in 1883. The black bear also is becoming scarce, having been killed for his fur, but in the Rockies grizzlies and other bears are still to be found. Many sportsmen declare hunting the grizzly to be one of the most dangerous sports in the world. He has keen scent and hearing, is quick, savage, and powerful, having been known to carry a wapiti carcass, 1000 lb. in weight, a considerable distance. He is generally caught by baiting with the body of a deer or other animal; when this is found to have been mauled (perhaps buried), the hunter hides, and watches

for the bear's return. Sometimes he is tracked with dogs, who distract his attention, and afford an opportunity for a shot. Canada is rich in game, moose and caribou being the largest; these are also found in some of the States. The moose is often taken by 'crust-hunting', when the surface of the snow is sufficiently hard to bear a man on his snow-shoes, but gives way under the sharp hoofs of the heavy animal, who is thus quickly overtaken; the caribou, having larger feet, can more easily escape. Newfoundland also became noted as a shooting ground, but in E. Canada as a whole B. G. is becoming scarce. The 'bighorn,' rare elsewhere, is now preserved in Brit. Columbia and Kootenay; it is difficult to stalk, there being always a sentinel on some high peak, constantly on the watch. Musk-oxen are found in the N., and some bison, and the Alaskan bears are almost as large as the grizzly. Polar bears are said not to give much sport, but are immensely strong; Captain Markham found one eating the body of a white whale 15 ft. long, and weighing 3 to 4 tons, which he had dragged up on the ice. Walrus may be hunted either with a rifle or harpoon; and some men have found Arctic sport fascinating, but it is perhaps harder and more trying than any other. There is good shooting in S. America, but the country is difficult. The chief animals are the jaguar, puma, many kinds of smaller game, including wild pig, and on the plains there are herds of wild cattle. See F. C. Selous, *A Hunter's Wanderings in Africa*, 1881; F. Nansen, *'Farthest North'*, 1893-96; T. Roosevelt, *African Game Trails*, 1910, and *Hunting Adventures in the West*, 1923; Sir A. E. Peacock, *The Book of the Lion*, 1913; C. Phillips-Wolley, *Big Game Shooting*, 1913; H. F. Wallace, *Big Game of Central and Western China*, 1913; W. D. M. Bell, *The Wanderings of an Elephant Hunter*, 1923; D. D. Lyell, *Memories of an African Hunter*, 1923; V. Stefansson, *Hunters of the Great North*, 1923; Lord Baden-Powell, *Pig Sticking or Hog Hunting*, 1924; R. Lydekker and J. G. Dollmann, *Game Animals of India, Burma, Malaya, and Tibet*, 1924; J. Ross and H. Gunn, *The Book of the Red Deer and Big Empire Game*, 1926; A. R. Dugmore, *African Jungle Life*, 1928; M. Johnson, *Safari*, 1928; K. Kittenberger, *Big Game Hunting and Collecting in East Africa*, 1929; R. G. Burton, *Sport and Wild Life in the Deccan*, 1932; J. W. Best, *Forest Life in India*, 1935; E. Hemlingway, *Green Hills of Africa*, 1936; K. Gandar Dower, *The Spotted Lion*, 1937; J. Corbett, *Man-Eaters of Kumaon*, 1946.

Biggar, tn. in the upper ward of Lanarkshire, Scotland, 25 m. S.W. of Edinburgh. It consists mainly of one lengthy street, and has a cruciform church with a tower in the middle. Pop. 1500.

Biggarsberg, range of mts. in S. Africa. It is practically an easterly extension of the Drakensberg Mts., and it separates the N. part of Natal and the dist. of Newcastle from the rest of the colony.

Biggleswade, mkt. tn. in Bedfordshire, England, on the r.b. of the Ivel. It has a

large weekly corn market, and there are many market gardens in the neighbourhood, which send their produce to London. It manufs. agric. implements, hosiery, and motor vehicles. Pop. 5900; rural dist., 21,000.

Bigba, or **Biga**, tn. in the prov. of Anatolia, Turkey, situated on the Bolki, about 18 m. from its entrance into the sea of Marmora.

Bigham, John Charles, *see* MERSEY, BARON.

Big Horn, riv. of the U.S.A., rising in the Rocky Mts., near Fremont's Peak in the N.W. of Wyoming. It is the largest affluent of the Yellowstone R., and is called Wind R. in its upper course. It is joined by the Little Horn R. at Fort Custer, to which point it is navigable. It traverses a mountainous country in a N.E. course for about 450 m.

Big Horn, co. in the N.W. part of Wyoming, U.S.A., drained by the Big Horn R. and its tributaries. On the E. are the Big Horn Mts., on the W. the Shoshone Mts. Stock-raising and agric. pursuits are carried on, and a system of irrigation is generally practised. The cap. is Basin. The dist. has an area of 12,226 sq. m. Pop. 12,000.

Big Horn, settlement in Custer co., Montana, U.S.A., situated at the confluence of the Big Horn and Yellowstone Rts., 240 m. E. of Butte city.

Big Horn Mountains, range of mts. lying principally in the N. part of Wyoming, U.S.A., on the E. of the Big Horn R. They are composed of anct. sedimentary rocks with a granitic nucleus. The range runs in a N.W. and S.E. direction for nearly 180 m., and has a number of summits over 9000 ft., covered by perpetual snow. The Sioux, the most belligerent of the Amer. Indians, had their fastnesses in these regions for a long time. In this dist., 15 m. to the S. of Fort Custer, occurred the famous massacre of Big Horn, in 1876, when 250 men under General Custer were annihilated.

Big Horn Sheep (*Ovis cervina*), species of large N. Amer. sheep with a known coat, which turns to bluish grey in winter; so named from the size of the horns of the ram, which often measure over 40 in. round the curve. The sheep are also named Rocky Mountain sheep.

Biglow Papers, The, satiric verses written in Yankee dialect supposedly by one Hosea Biglow, but really by James Russell Lowell (q.v.). The first series appeared in 1848 and dealt with the U.S. war with Mexico. The second series appeared in 1867 and dealt with the Civil war.

Bignonia, genus of plants of the Bignonaceæ, named by Tournefort after the Abbé Bignon, librarian to Louis XIV. All the species are splendid plants while in blossom, most of them are climbers, and they are natives of America. *B. caprea-lata* climbs by means of bluntly hooked tendrils, *B. Tweediana* by 3 sharply clawed tendrils.

Bignonaceæ, a natural order of dicotyledonous trees or shrubs, found chiefly in Brazil, but also in Africa and America.

The most interesting genera are *Bignonia*, *Tecoma*, *Catalpa*, and *Eccremocarpus*.

Bigod, Sir Francis (1508-37), Eng. rebel, took a degree at Oxford. He served Cardinal Wolsey, but was entangled in the Pilgrimage of Grace, undertaken as a protest against Henry VIII.'s church reforms. He was hanged at Tyburn because he was a leader in the ineffectual rising of Beverley. Some of his letters may be seen at the Public Record Office.

Bigod, Hugh and Roger, *see* NORFOLK, EARLS OF.

Bigorre, formerly a sub-div. of S.W. France, in the prov. of Gascony. It now forms part of the dept. Hautes-Pyrénées. The cap. is Tarbes; other tns. are Vic de Bigorre, Luz, and Lourdes.

Big Rapids, city and co. seat of Mecosta co., Michigan, U.S.A. It is situated on the Muskegon R., 55 m. N. from the city of Grand Rapids. It has an important trade in lumber, and there are iron foundries, mills, and furniture factories. Pop. 5000.

Big Sandy River: (1) Riv. of Tennessee, U.S.A., which runs into the Tennessee R. in Henry co., at the point where the Louisville and Nashville railway crosses the Tennessee R. It has a length of about 100 m. (2) Riv. of Wyoming, U.S.A., which runs into the Green R., 22 m. N. of Bryan, after a course of about 100 m.

Big Trees, post tn. in Calaveras co., California, U.S.A. It has an altitude of 4600 ft. Its famous grove of sequoia trees, over 300 ft. high, gives it its name.

Bihac, or **Bihacz**, fort, tn. in Yugoslavia, situated on an is. of the Unna, 65 m. W. of Banialuka. Its possession was often contested during the Turkish wars. Pop. 6000.

Bihar, or **Behar**, prov. of India. Until 1936 constituted, together with Orissa and Chota Nagpur, one single prov.; prior to that, all 3 sub-provs. had been divisions of Bengal presidency, but that association was ended in 1912 on the reconstitution of Bengal. Bihar and Orissa, as the prov. was then known, also included the Sambalpur dist., which was transferred to Bengal from Central Provs. in 1905. In 1931 the Oriyas demanded a separate administration for Orissa on the ground that they were racially and linguistically distinct from B., this demand was granted by the gov. of India, whose boundary commission reported on the question in 1932. B. is now under a governor, whose administration comprises a chief secretary, 5 commissioners of divs., and other officials. B., known as 'the Garden of India,' is bounded on the N. by Nepal, on the W. by the United Provs., Central India, and Central Provs., on the S. by Chota Nagpur and Orissa, and on the E. by W. Bengal. It has an area of 69,000 sq. m., and lies in the fertile Ganges Valley. Stretching from the foot of the Himalayas to the tropics, the prov. experiences extremes of temp. and a variety of vegetation. As in Bengal, rice is the staple crop, about half the cultivable area being devoted to it; maize, sugar-cane, tea, indigo, oil-seed and tobacco are also

grown, the cultivation of the last-named being greatly stimulated by the erection of a cigarette factory, one of the largest in the world, at Monghyr. Much of India's coal and mica are mined in the prov.; iron is also found, and there is a large iron and steel works at Jamshedpur. Other minerals include alluvial tin, salt-petre, and gold. There are many feudatory states. Patna, on the Ganges, is the cap. and chief tn.; Monghyr and Bhagalpur are other important cities. Gaya is a famous place of pilgrimage for both Buddhists and Hindus, and at the anct. city of B. are the remains of a once-important Buddhist college. B. is inhabited by a large number of races, and of the many tongues spoken Bihari, W. Hindi, and Oriya are the chief. B. prov. has a long hist. of lawlessness and violence. In the decade before the 1939-45 war cases of train-wrecking and looting were frequent. In Aug. 1942 B. was a hot-bed of revolution, and for some days the prov. was isolated, all railway lines and telegraph wires being cut and roads blocked. The army had to resort to extreme action before it could reopen lines of communication to the Burma front. During the Anglo-Indian negotiations for self-government in India the communal riots which broke out in Calcutta in Aug. 1946 spread eventually to B., and for over a fortnight in Nov. there was large-scale rioting in Patna, Bhagalpur, Monghyr, and Gaya. It seemed evident that this outbreak of communal frenzy was in retaliation for the Moslem excesses in E. Bengal (Aug.) and as the Hindus outnumbered the Muslims in B. by seven to one, the result might be imagined. The number of dead in the affected dists. has not been accurately computed, but the most reliable estimates were that they were probably between 2000 and 3000 dead. The pop. is over 36,300,000, 82 per cent being Hindus.

Bihar, or **Behar** (Sanskrit *vihar*, monastery), anct. city of the prov. of B., India, 35 m. S.E. of Patna. It was formerly a city of renown, being the cap. of the kingdom of Maghadha, and was a centre of pilgrimage to the Muslims. There is a trade in silk, muslin, and coloured prints and cottons. Pop. 32,000.

Bihar, range of mts. on the borders of Hungary proper and Transylvania. The range, of which the highest peak is B. (6000 ft.), contains the sources of the head-streams of the Koros, and on the E. side those of the Aranyos R.

Bihari, Alexander (1856-1906), Hungarian painter, b. at Grosswardeln. His most famous pictures are 'Gypsies with the Broken Violin before the Country Justice,' 'A Pleasure Trip on the Zagya,' 'Peasants at Supper on the Pusztá,' and 'A Rumanian Funeral.'

Bihe, dist. in Portuguese W. Africa situated about 12° 40' S. and 17° E. It lies at an altitude of 5300 ft. above the level of the sea, and has a sufficiently mild climate to allow of the cultivation of corn and other crops. The Benguela-Katanga railway connects B. with the coast.

Bijanagar, **Bijnagar**, or **Bisnagar** deserted city in the Madras presidency

India, 36 m. N.W. of Tumbuddra. It was an extensive place, 8 m. in circumference, and contains remains of temples to Shiva, Krishna, and Rama, besides other fine buildings. It was founded in 1336, and was a flourishing city when it was sacked by the Muslims in 1564.

Bijapur, or **Bejapoor**, dist. and city of India, in the Bombay prov., situated on a trib. of the Krishna, and 245 m. S.E. of Bombay. It was a flourishing city in the time of the Moguls, and now consists of 2 parts, the fort on the E. and the old city on the W. It is one of the most picturesque collections of ruins in India; all the remains of the former magnificent buildings are Mohammedan, save for one very early Hindu temple. Pop. (dist.) 79,700; (tn.) 32,000.

Bijawar, state of India in the agency of Bundelkhand. The tn. of B. is situated in 24° 37' N. lat., and 79° 31' E. long. The title of the chief, who is a Rajput of the Bundela clan, is maharaja. The state came under Brit. administration in 1901. Its area is 974 sq. m., and its pop. (1941) 120,990.

Bijbharu, or **Bijbahav**, tn. in the state of Kashmir, on the R. Jhelum. 25 m. S.E. of Srinagar.

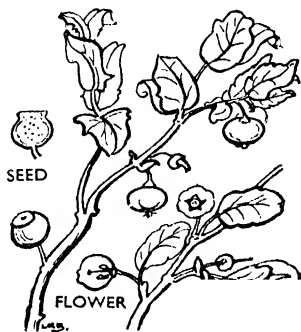
Bijnaur, or **Bijnor**, tn. and dist. in the United Provs. of India, in the Rohilkand div. The tn., which is 3 m. from the l. b. of the Ganges, has a trade in sugar, and an Eng. high school for boys. Pop. 18,000. The area of the dist. is 1898 sq. m. Pop. 740,000.

Bika, see **CELE-SYRIA**.

Bikaner, state of India, in the Rajputana agency; area 23,315 sq. m. The pop., which was reduced by the famine of 1899-1901, was 584,000 in 1901, and by 1941 had increased to 1,293,000. The chief industries are camel-rearing and the carving of ivory and gold ornaments. Coal has been found in the dist. The tn. of B. manufs. carpets, blankets, and candy. The maharaja of B., Sir Ganga Singh, who succeeded to the throne in 1887 at the age of 8, was entrusted with full powers in 1898, and first visited England in 1902. He served in the First World War as staff-officer, in France and in Egypt, took part in the Peace Conference, and signed the treaty of Versailles. In 1917, at the second of the conferences of Indian princes inaugurated by Lord Chelmsford, the maharajah expressed a hope that the ruling princes would be considered in any general scheme of Indian reforms; and, when the Chamber of Princes was inaugurated, Feb. 1921, he was appointed its first chancellor, and so remained till 1926. He proved a most competent ruler of Bikaner. In his lifetime he made B. one of the leading states in India, his outstanding achievements being the introduction of large-scale irrigation works; changing his cap. from a medieval Indian tn. to a spacious modern city; and the grant of representative gov. He was the first Indian prince to be made a full general in the Brit. Army. In both world wars he offered all his state resources to the Crown. He d. in 1943.

Bikelas, Demetrius (1835-1908), Gk. poet. He drew his inspiration chiefly from the Klephtic songs, and he used the Epitrotic dialect. His poems are characterised by grace of style and imagination.

Bikh, Bish, or Vish (Hindu, poison), name given to the plant *Aconitum ferox*, which grows in the Himalayas and in Nepal; or, more specifically, to the fatal poison extracted from this plant.



BILBERRY

Bikrampur, anct. tn. of Dacca, Bengal, India; formerly the seat of gov. of the Hindu kings of Bengal, and an educational centre.

Bilara, tn. of India in Jodhpur, Rajputana, situated on the R. Luni.

Bilasapur, dist. in Central Provs., India, with an area of 7798 sq. m. The cap. is B., about 250 m. N.E. from Nagpur by rail. The products are rice, wheat, cotton, etc. Pop., tn. 24,000; dist. 1,232,000. The state of B., ruled by a raja, has an area of 453 sq. m. Pop. 110,000.

Bilbao, tn. of Spain, the cap. of the prov. of Biscay, on the navigable R. Nervion. The tn. lies in a plain a few m. from the sea encircled by mts. The picturesque old tn., with its churches and monasteries, is on the right of the riv., and is united to the new tn. on the left, with its broad business streets, parks, and squares by fine bridges. It possesses a Basque univ. and a commercial high school, chamber of commerce, museum, and learned societies. It owes its prosperity to the large deposits of iron-ore in the vicinity, of which about 5,000,000 tons are annually exported, mainly to Great Britain. Coal and coke are the prin. imports, as smelting is also carried on, and pig-iron exported in considerable quantities. Among the other industries are the manuf. of steel, tin-plate, chemicals, glass, and paper; shipbuilding is also carried on. The tn. has the largest dry dock in Spain, and in addition another dry dock and two graving docks. At the outbreak of the Sp. Civil war the Gov. held the B. area. In-urgent warships shelled the city on Aug. 1, 1936. When the Basques entered the war on the side of the Gov., Franco mined

the port of B. Pressure on the B. front, together with the loss of Malaga, led to the fall of the Caballero Gov. early in 1937, and later that year Franco's forces, after severe fighting, captured the city.

Bilberry (*Vaccinium myrtillus*), plant belonging to the Ericaceae, which is found on moors and hilly woodland dists. It has deciduous leaves and edible blue berries. Other names for it are whortleberry and blaeberry.

Bilbilis, anct. tn. of Spain, now called Calatayud (q.v.). In Rom. times it was celebrated for the manuf. of weapons, and had also baths, called Aquae Bilbilianae. In the time of the Rom. Empire it had Augusta added to its name.

Bilboes, tethers formerly used for offenders on board ship. This word and bilbo, a sword (both Shakespearean), were derived from the Sp. tn. Bilbao, or Bilboa, noted for its iron and steel.

Bilderdijk, Willem (1756-1831), Dutch poet, b. at Amsterdam. An accident in his youth compelled him to give himself up to study. He studied at Leyden, and after taking his doctorate in law degree at that univ., he started practice at The Hague. When, in 1795, the Fr. invaded Holland, he refused to submit to the new administration and quitted the country. After a visit to Germany, he took up his residence in London. Here he had a love affair with one of his pupils, Katharina Schweickhardt, whom he married in 1802, having divorced his first wife. This took place in Brunswick, and 4 years later his friends persuaded him to return to Holland. Here he was well received by Louis Napoleon, who made him his librarian. On the abdication of Louis B. fell into poverty, in which he d. He wrote nearly a hundred works, conspicuous for their command of language. His chief poetical works are *Het Buitenleven*, 1803; *De Ziekte der geleerden*, 1807; *De Ondergang der eerste wereld*, 1820.

Bile, a fluid secreted by the liver. Human B. is yellowish-brown or green in colour, is of a viscous nature, has a sp. gr. of 1010 (water = 1000), a bitter taste, an alkaline reaction, and a sickly odour. The quantity secreted by the liver averages 500-600 grains per 24 hours, but may amount to as much as 2400 grains. B. consists mainly of B. salts and B. pigments, with small quantities of fats, cholesterin and lecithin. The most important B. salts are sodium glycocholate and sodium taurocholate. The pigments are biliverdin, which is green in colour, and bilirubin, which is reddish. The former is most abundant in herbivorous animals, the latter in flesh-eaters, and the colour of the B. is determined by the relative proportions of these pigments. Both are waste products of the used-up haemoglobin in the blood, the iron from which is, however, retained for further use. B. is secreted from the blood by the liver; some of it is temporarily stored in the gall-bladder, while the remainder passes through the common B.-duct to the duodenum, the first part of the small intestine. B. in itself is not a digestive juice, but certain of its salts promote

greater activity in the pancreatic juices, and aid in the absorption of fats and fatty acids. The production of B. is practically continuous, but is stimulated by the processes of digestion. If by any means it is prevented from entering the intestine, digestion may proceed without much disturbance to health. If, however, excess of B. in the liver leads to its being reabsorbed by the blood, the condition known as jaundice is produced; the tissues are coloured yellowish by the B. pigments, and there is general derangement of the system. A *bilious attack* is only indirectly connected with B.; catarrh is set up by the ingestion of unsuitable or too abundant food, and sickness, headache, and giddiness result, with vomiting of food and bilious matter. Purified ox-bile has been used as an aperient and antiseptic. The B. of oxen which have d. of rinderpest has been injected in cattle in S. Africa for the prevention of that disease, and the B. of serpents is looked upon as a partial antidote to their poisons.

Bilge, see under SHIPS AND SHIP-BUILDING.

Bilgram, tn. in the United Provs., India. It is situated in the Oude prov., about 50 m. N.W. from Cawnpur. There are the ruins of a temple of Srinagar.

Bilharziasis (Bilharziosis, or Schistosomiasis), disease common in tropical and sub-tropical countries where unsanitary conditions prevail. Different forms occur, but all are due to a genus of flat worms, *Bilharzia*, named after Bilharz, who first discovered a species in 1851, in Cairo, and named it *Distomus hæmatobium* (later *Schistosoma* or *Bilharzia hæmatobium*). Another species (*S. japonica*) was found in China and Japan early in the twentieth century. B. was so prevalent in Africa and Asia that the Colonial Office appointed a commission (1913) to investigate the disease. The investigation was interrupted by the outbreak of war in 1914, but the infection of troops in Egypt stimulated research, and Leiper and other workers were able to trace the life hist. of the *Bilharzia*. In water, the eggs of *Bilharzia* develop into minute free-swimming larvae which infect snails. The infection is specific; each species of *Bilharzia* parasitises a particular species of snail, in which it forms spores. These develop into other free-swimming forms, cercariæ, which enter man either in drinking water or by getting on his skin during bathing, and boring their way in. They then bore through tissues until they reach the portal veins, where they remain until adult. The male coils round the female, and they migrate through the mesenteric veins until they reach the wall of the bladder. This the female *B. hæmatobium* pierces, causing the symptom hæmaturia, and lays her eggs which are evacuated with the urine. (Cercariæ can live for only 2 days, so water enclosed for this period may subsequently be used without danger of infection.) The eggs of *B. mansoni* are laid near the anus, and are expelled with the faeces. If only males of this species infect man they remain in the liver, for migration is only necessary to lay

eggs in a suitable place. In the early stages, B. may be cured by the injection of tartar emetic into the veins; the late stages of the disease are incurable. Recent research on the prevention of B. includes attempts to eliminate the snail, and to destroy cercariæ by the addition of compounds such as chloramine to contaminated water. See R. T. Leiper, *Researches on Egyptian Bilharziasis*, 1918; A. H. Hall, 'Bilharziasis in Iraq' (*Journal of the Royal Army Medical Corps*, vol. xlv., 1925).

Billary Calculi, see GALL-STONES.

Bilimbi, see BLIMBING.

Bilin, tn. in Czechoslovakia, 7 m. S.S.W. of Teplice. It has 2 castles, one having a collection of arms and minerals. B. exports alkaline mineral waters, and sugar is manufactured. Pop. 10,000.

Bilin, riv. in Burma. Its course lies between the Salween and the Sittang, for more than 280 m. It enters the gulf of Martaban. In the Second World War the inadequate Brit. defence force at Thaton fell back on the B. to escape piecemeal destruction at the hands of the Jap. on the Salween R. (Feb. 1942). After fierce and costly fighting for both sides the Brit. units fell back on the Sittang. (See BURMA, SECOND WORLD WAR, CAMPAIGNS IN.)

Biliousness, a condition characterised by loss of appetite, headache, lassitude, coated tongue, and constipation. It is popularly supposed to be due to over-secretion of bile, but is more probably occasioned by catarrh or other disturbances of the gastric regions.

Bill, or **Beak**, in natural hist., the term applied to the horny toothless jaws of birds. The foremost bones of the skull are elongated, and covered with a horny sheath or rhamphotheca; the same with the lower jaw, or mandible. No living birds have any teeth, but the earliest forms of birds, such as the archæopteryx, undoubtedly possessed some. The Tertiary Period appears to be the time when birds ceased to have teeth; traces can still be found in certain species. The bill is not usually sensitive, though in some aquatic birds, and in the woodpecker, it is much more sensitive than usual. The chief uses of the B. of a bird are for dividing food, for fighting, preening, nest-building, etc. It varies in shape in different species of birds, its conformation being adapted to the nature of its food and habits. Among peculiar beaks may be noticed the raptorial beak of birds of prey, the fissirostral beak of swallows, etc., the tenuirostral beak of sunbirds, etc.

Bill, legal term. In Eng. criminal law the accusation is drawn up in writing in the form of a 'B. of indictment,' which is presented to the grand jury, who, after hearing the witnesses on behalf of the prosecution, either find a 'true B.' i.e. are satisfied there is a *prima facie* case, or find 'no true B.' i.e. ignore the case. The B. of indictment so endorsed is presented to the court.

Bill-broker, name applied to one who deals with bills of exchange, receiving bills from merchants, foreign or other

banks, etc., and disposing of them for the best terms, and receives a commission on the transaction. But now the B. usually buys bills outright and sells them to banks and other buyers. He is financed by the banks by loans at call and short notice. He acts as prin. and not agent, and the name of broker does not strictly apply to him.

Bill Chamber, a dept. of the Court of Session in Scotland which deals with business of a summary nature, such as applications for interdict, etc. During the sitting of the Court of Session the B. C. is presided over by a single judge, called lord ordinary, who is the junior judge of the court. During the vacation the B. C. has many of the powers of the Court of Session, and is then presided over by the judges in rotation. It is so called because in former times summonses and executions were generally begun by a writ, called a bill, but since 1813 such a process is not necessary.

Billfish, see BONY PIKE.

Bill in Equity, or **Bill of Chancery**, formerly a statement in writing of a plaintiff's case, setting forth the grounds on which he claimed relief. It is now an obsolete form of pleading, and its place is taken by a writ and statement of claim.

Bill in Parliament, see PARLIAMENT.

Bill of Adventure, in maritime law, a writing signed by a shipmaster, merchant, or owner, declaring that merchandise shipped in his name are 'at the venture' of another, and his responsibility is limited to their safe delivery.

Bill of Costs, an itemised account setting forth in detail the work done and the charges and expenses paid by a solicitor on behalf of his client. By statute a solicitor must deliver a signed B. of C. to his client, and may sue if not paid within a month.

Bill of Exchange, a form of credit instrument of practically universal commercial use, and governed by laws and regulations which, with certain differences, are identical in all countries. In the United Kingdom, the law, founded on mercantile custom, judicial decisions, and separate statutes, was codified in the Bills of Exchange Act, 1882, which has been adopted by Brit. overseas dominions and colonies and agrees in the main with the law of the U.S.A. The original form from which the B. of E. developed was a simple means by which money could be paid in a distant place without sending cash; thus A living at X owes money to C living at Y; D also living at Y owes a debt to A; therefore A sends to C an order to D to pay the money to C; or suppose A sells to D goods on credit, but his business requires ready money; if he can get D's acknowledgment, and his credit is good, he can raise money now on D's promise to pay cash later for a consideration from a third party; thus arises the discounting of bills; D is going to pay A in 3 months for goods shipped, £100; C will lend A the money now at 4 per cent; he therefore will give £99 and collect £100 from D when the time expires. Various forms of such means of transacting commercial business

were no doubt in use in early times, but the B. of E., as a negotiable instrument, was evolved, it is said, by the Florentine Jews in the thirteenth century, and was in use generally in commercial Europe by the fourteenth century. There are 2 classes of bills, 'inland' bills, covering transactions in one country only, and 'foreign' bills, which are drawn in one country and payable in another. Bills may also be classified as good 'trade bills' where the transaction is based on produce or goods sold and coming into the market; such bills are said to pay themselves, and form the best kind of security for advances made on them; other bills, which are drawn on securities or on credit, are called 'finance' bills; lastly, there are 'accommodation' bills, or 'kites,' where no valuable consideration passes between the parties to the bill. By the Bills of Exchange Act, sec. 3, a B. of E. is defined as 'an unconditional order in writing, addressed by one person to another, signed by the person giving it, requiring the person to whom it is addressed to pay on demand or at a fixed or determinable future time a sum certain in money, to, or to the order of, a specified person, or to bearer.' Thus a cheque (*q.v.*) is a B. of E. drawn on a bank payable on demand. (It may be noted here that bills payable on demand, i.e. cheques, must have a twopenny stamp on them; other bills must be stamped *ad valorem*; the rates can be found in any almanac, postal guide, etc.). An example of a simple inland B. of E. will elucidate the definition:

£100

LONDON, 1st Nov. 1922.

Three months after date pay to the order of Mr. S. Robinson the sum of one hundred pounds, for value received.

SMITH & Co.

To Messrs. JONES & Co., Glasgow.

The last words, 'for value received,' are not legally necessary, as the law presumes that the bill was given for valuable consideration. Here Smith & Co. are the 'drawers,' Jones & Co. the 'drawees,' who on signing their name across the front of the bill become 'acceptors.' Robinson is the 'payee.' By accepting the bill Jones & Co. become the persons primarily liable on the bill. The acceptor may qualify the bill by attaching conditions, e.g. delivery of bills of lading, or making it payable at a certain place, such as his bank. When the bill falls due, that is, on Feb. 1, 1923, with 3 days' grace, it is presented to the acceptors for payment; if it is not accepted or not met by payment at maturity the bill is 'dishonoured,' and the holder must give notice at once to the drawer and any other persons who have indorsed the bill, from whom he can then claim payment. If the bill is a 'foreign' bill it must be 'protested' by a notary public on the day of dishonour. A bill dishonoured by non-acceptance, can be accepted by another 'for honour supra protest,' if for non-payment, can be paid 'supra protest'; the new acceptor and payee having rights against the party for whose honour he has accepted or paid. A

B. of E. is a negotiable instrument, the property in which passes, like money, by delivery, if the bill is made payable to bearer; if payable to order then it must be endorsed. In the example given above, the bill is made payable to the order of S. Robinson; if he wishes to transfer the bill he writes his name on the back. An endorsement in blank makes the bill payable to bearer; a special endorsement makes it payable to a specially named person's order, who to transfer the bill must again endorse it, and so on. A bill can, and often does, pass through a number of hands before it is discharged by presentation to the acceptor and payment by him, and the greater part of the law relates to the rights and liabilities between the various parties through whom it has passed. The person to whom a negotiable instrument is transferred by endorsement or delivery can sue in his own name, and if he is a 'holder in due course,' takes the bill free from all defects of title. To be a 'holder in due course' he must have given value for the bill, the bill must not be overdue or known to be dishonoured, and he must take the bill honestly and without notice of a defect in title, such as fraud, etc. See M. D. Chalmers, *Digest of the Law of Bills of Exchange*; Byles, *Bills of Exchange*; also J. A. Slater, *Bills, Cheques, and Notes* (for general readers).

Bill of Exchequer, or Exchequer Bill, a form of security on which the Brit. Gov. borrows money for the public service, under parl. authority. They were first issued in 1696. They used to be issued annually, and bore daily interest till 1861. They were current for 5 years, and renewable, and the rate of interest, fixed half-yearly, varied with the money market. They became extinct in 1897, and have been superseded by treasury bills, issued for a maximum period of 12 months, and exchequer bonds, issued for a specific period, and with a fixed rate of interest.

Bill of Health, a document given to the master of a ship when clearing from a port, by the consul or other port authority; it shows the sanitary condition and health of the port; where there is no infectious or contagious disease existing, it is a 'clean bill'; if disease is thought possible, it is a 'suspected' or 'touched'; if it actually exists, it is a 'foul bill.' Bs. of H. are necessary when the next port of call is one where the ship may be quarantined if there be no clean bill.

Bill of Lading, a document signed by the master of a ship or an agent of the owner, acknowledging that goods have been received on board, and stating the terms on which they are to be carried. The B. of L. serves as a receipt for the goods shipped on board, as the memorandum of a contract between the owner of the ship and the shipper of the goods, and as a document of title to the goods, and if, as is usual, the goods are deliverable to the consignee's 'order or assigns,' the B. of L. becomes a negotiable instrument, transferring by endorsement the rights to the goods and the various liabilities and rights of the contract. There are various

forms of Bs. of L., but they all contain the names of the shipper, of the ship, the port where the goods are loaded and the destination, the description of the goods, place of delivery, name of consignee, freight, the excepted perils, and shipowner's lien. With regard to the more important of these items, it should be noted that it is implied that there should be no deviation from the route of the voyage, and the shipowner is liable for loss or damage due to such deviation, except to save life but not property. It is usual, however, to insert in the B. of L. specified 'liberties'; the quantities and condition of the goods at the time of shipment must be described, as the contract is to deliver that quantity in the same condition. A 'clean bill' is one where the goods are not described with qualifying words, such as 'cases one or three in damaged condition,' or the like. The contract is to deliver at a certain place; the shipowner is liable if he does not do so, unless his failure is due to one of the perils excepted, or if, for example, war has closed the port. The B. of L. generally contains the name of the consignee to whom the goods are to be delivered, and usually adds to his 'order or assigns.' He can then transfer his rights and liabilities to a third person by endorsing his name and delivering the document. The bill thus becomes a negotiable instrument, and can be re-endorsed. On payment of freight the endorsee receives delivery of the goods. The amount of freight is either stated in the B. of L., or reference is made to the terms of the charter-party. The 'excepted perils' are those causes of loss or damage which exempt the shipowner from liability. The common law exemptions were 'act of God,' i.e. every act in which man has no part; and the act of the 'king's enemies,' i.e. from war. The shipowner is presumed to undertake absolutely that the ship is seaworthy, and that all reasonable care will be taken by his servants and agents. It may be noted that by Eng. law a shipowner may make any exceptions, but in the U.S.A. an Act of 1893 forbids the insertion of terms exempting the owner from liability for loss through his servants' negligence. Finally, the shipowner has a lien on the goods for freight by common law, and by the terms of the B. of L., usually for demurrage. See Scrutton, *Charter Parties and Bills of Lading*, 1925; T. G. Carver, *Carriage of Goods by Sea*, 1925.

Bill of Mortality, weekly statement, formerly issued by the par. clerks, showing the number of deaths and the causes that had occurred in each par. based on the reports of 'searchers.' They are said to date from 1538, when par. registers were estab. They were regularised in 1603, and continued till the Births and Deaths Registration Act, 1836, was passed. The age of the persons dying was not inserted till 1728, from which dates the science of life insurance.

Bill of Rights, the name commonly given to the Act declaring the rights and liberties of the subject, and settling the succession of the crown, 1689, which

embodied the Declaration of Right drawn up by a committee of the Commons and presented to William, prince of Orange, and his wife, afterwards William III. and Queen Mary. After declaring the crown vacant by the abdication of James II., the following acts are declared illegal: the suspending or execution of laws by royal authority without consent of Parliament; the power to dispense with laws; the establishment of courts, such as the commission for eccles. causes; the levying money by prerogation without consent of Parliament; the raising or keeping of a standing army in time of peace within the kingdom without such consent. The right to petition the king, the freedom of parl. elections, the freedom of speech in debates, and the necessity for frequent parliaments are asserted. The rest of the act is concerned with the settlement of the crown, to be superseded by the Act of Settlement, 1701. The B. of R. is the nearest approach to a written constitution which the United Kingdom possesses. Its provisions, so far as applicable, were embodied in the U.S.A. constitution.

Bill of Sale, a form of legal document, by which the grant or transfers to another (the grantee) the ownership, while retaining the actual possession, of personal chattels, such as goods, furniture, and other articles capable of transfer by delivery, including fixtures and growing crops, when assigned and charged separately from the building or land to which they are attached. The law on Bs. of S. is to be found chiefly in the prin. Act of 1878 and the amending Act of 1882. The objects of these Acts are widely different. The enactments prior to 1882 were designed to protect creditors and to prevent their rights being affected by secret assurances of goods which were permitted to remain in the ostensible possession of a person who had parted with the property in them. The Bs. of S. were therefore made void only as against creditors or their representatives, but as between the parties to them, they were perfectly valid. The Act of 1882 was designed for the altogether different purpose of preventing needy persons being induced to sign complicated documents which they might be unable to understand, and being subjected by their creditors to the enforcement of harsh and unreasonable terms; hence, a form was presented to which the Bs. of S. were to conform. Bs. of S. may be *absolute*, where the chattels are sold absolutely; they must be attested by a solicitor; the regulations as to such Bs. of S. are laid down in the Bills of Sale Act, 1878; non-compliance does not void the B. of S. as between the parties, but only as against the trustee in bankruptcy and execution creditors of the grantor. More important are the second class, Bs. of S. *by way of security for the payment of money*; they must be made in accordance with the form given in the Bills of Sale Act, 1882; which can only be departed from in verbal differences. The bill must be by deed, must contain the names and addresses of the borrower and the lender of the money for which it is security; the amount lent,

and the interest; the assignment as security of the chattels, of which an inventory must be attached; the time when the money lent, and interest, will be repaid; a covenant to insure the goods and pay all rent, rates, and taxes due on the premises where they are. The lender stipulates that the goods will not be seized except for the reasons set out in sec. 7, viz.: (1) Default in payment and covenants; (2) Bankruptcy or distraint for rates, rent, or taxes; (3) Fraudulent removal of the goods; (4) Unreasonable refusal to produce last receipts for rates, etc.; (5) Execution under a judgment. A B. of S. must be witnessed and stamped in accordance with the scale, and registered within 7 days of its execution. As trade protection societies pub. all such registrations, a B. of S. damages a grantor's credit. All Bs. of S. not complying with the regulations of the Act are void. There are no Bills of Sale in Scotland. See H. Reed, *Bills of Sale Acts* (14th ed.), 1926; Pitman's *Bankruptcy and Bills of Sale* (ed. W. V. Ball), 1921.

Bill of Light, a document given by an importer of goods to a customs officer, containing as good a description as possible of the goods, when a full description cannot be given. The goods can then be landed, but the full description must be given within 3 days.

Bill of Store, a permit granted by the customs house to reimport Brit. goods without payment of duty such as would have been imposed had they been foreign goods. It must be within 5 years of exportation.

Bill of Victualling, or **Victualling Bill**, an order to the master of a vessel by a custom-house officer for the withdrawal from bond or for drawback of such stores as are necessary for the crew and passengers. Stores not on the bill or if landed in the United Kingdom without authority, are liable to be forfeited and destroyed.

Billancourt, see BOULOGNE-BILLANCOURT.

Billardiera, or **Appleberry**, a genus of plants belonging to the order Pittosporaceæ. It is found in Australia, but some species of it are cultivated in Eng. glasshouses. It bears a fruit which, when ripe, is generally somewhat bluish in colour, and which possesses a strong resinous flavour. The Tasmanian *B. longiflora* is grown out of doors in this country, for the decorative value of its fruits.

Billaud-Varenne, Jean-Nicolas (1756-1819), Fr. revolutionary, the son of an advocate, b. at La Rochelle. His early home influences were bad, his parents being both of weak character. He joined a religious society when he was 19, but did not bind himself by vows; he worked instead at literature. In 1785 he went to Paris, and shortly afterwards married and became an advocate in the parlement. Political matters then absorbed his whole attention, and in 1789 he pub. a 3-vol. work on the subject, *Despotisme des ministres de la France*. From that time he became an acknowledged revolutionist. In 1791 he pub. *L'acéphalocratie*, for which he was obliged to

hide for a time. In 1792 he was elected deputy-commissioner of the National Convention. He worked for the abolition of monarchy. When the trial of Louis XVI. took place, he voted for 'death within twenty-four hours.' He was prominent in the overthrow of the Girondists in 1795, and in the same year he was made president of the Convention, and member of the Committee of Public Safety. Soon after this he was arrested, and banished to Cayenne. He refused the pardon offered him by Bonaparte, and in 1816 took refuge in St. Domingo, where he d.

Billbergia, a genus of perennial plants belonging to the order Bromeliaceae. They are chiefly found in Brazil, but also in S. America generally, and have stiff channelled leaves and tubular flowers of various colours.

Bille, Steen Andersen (1797-1883), Dan. admiral. He served in the Fr. marine during the campaign of 1823, was made rear-admiral and minister of the marine in Denmark, commanded an expedition round the world, and wrote an account of it.

Billericay, mrkt. tn. in Essex, Eng., 5 m. E. of Brentwood (Middlesex). Its old church has a tower which is considered one of the finest examples of brick architecture extant. Brickmaking is the local industry. Pop. 1500.

Billet, in architecture, a style of ornamentation, belonging to the Norman period, of which the distinctive feature is the rounded arch. The B. was formed by cutting a round moulding into notches, so that the remaining parts had the appearance of small logs. In the transitional period the B. moulding disappeared.

Billet, in heraldry, a bearing of the shape of a rectangle placed on end. Although Bs. are common in armorial bearings, their representation is uncertain. Some suppose them to represent bricks, and others letters. 'Billety' signifies that the charge is uniformly covered with Bs. The best-known instance of this is, no doubt, the coat borne on an escutcheon over the arms of England during the reign of William and Mary. See also HERALDRY.

Billeting, or **Cantoning**, as it is called, is a means of lodging officers and soldiers among the inhab. of a dist. Since the Army Act of 1881 B. is limited to the extent that only public-house proprietors, inn- and hotel-keepers are liable to have soldiers quartered on them, and keepers of livery stables to tend their horses. If the keeper of the house is unable to provide room, he is obliged to obtain accommodation in the vicinity. In 1909 'public buildings, dwelling-houses, warehouses, barns, and stables' were included in the official list of possible billets. During the two world wars B. became an obvious necessity, both in home tns. near the training centres and also in the tns. and vils. in the war area. In time of peace B. is only resorted to in England when the military is called out to assist the civil authority. The amount which is to be refunded to a householder to defray the cost of feeding one or more

soldiers is laid down in army regulations. B., however, may consist only of board without food, and in this event no compensation is allowed. The householder is compelled to afford shelter, but not necessarily to supply beds. In the U.S.A. the consent of the householder is a *sine qua non* in time of peace, and B. in wartime is regulated by legislation. In continental countries, however, B. prevails to a greater degree; no fewer than 8 or 9 men and 3 or 4 horses may be quartered on one private house during army manoeuvres. The sustenance for men and horses is provided by the commissariat.

From earliest times, when the monasteries afforded hospitality to soldiers, the system of B. has been in vogue. Natural and cordial resentment has invariably been aroused by these arbitrary proceedings, and the third article of the Petition of Right, passed in 1628, bound the king 'not to billet soldiers on private individuals.'

Billiards (probably from O.F. *billard*, a stick with a curved end), an indoor game of skill. It is not definitely known whether B. originated in France or England, and it is more than doubtful if the game seen by Anacharsis in his travels through Greece in 400 B.C. really had any analogy to even the most primitive form of the modern pastime. Among Eng. writers it is mentioned by Spenser in *Mother Hubbard's Tale*, 1591, and Shakespeare in *Antony and Cleopatra* (1607). Ben Jonson draws a simile from the game in praise of Chloris; Locke uses it to illustrate a passage in his famous *Essay Concerning Human Understanding*; Gayton in his notes to the 1654 ed. of *Don Quixote* refers to B. as being played in taverns; and Charles Cotton in *The Compleat Gamester* (1674) states that in England 'there are few towns of note . . . which hath not a public billiard table,' and proceeds to a description of the game and the rules then in force. Louis XIV. was an enthusiastic player, and in Louis XV.'s time the game had become popular with both the male and female members of the Fr. court. Early in the nineteenth century, the introduction of the cue (a flat-headed mace had previously been used), to which later a leathern tip was affixed, and the use of chalk which made possible the side-stroke, caused a revolution in the science of billiards. These were followed some years after by the substitution of slate beds for the former ones of oak and marble; and in 1835 india-rubber cushions for those of flock and list; these were later improved by being constructed of a composition manufactured for the purpose, which is impervious to variations in temp. Under these conditions, professionals, like John Roberts, Junior, Cook, Peall, Diggle, Reece, Dawson, Stevenson, Inman, and also the more recent champions, T. Newman, J. Davis, W. Smith, and W. Lindrum, have brought the game to such mathematical exactitude that the B. authorities have had to frame, from time to time, fresh rules in order to vary the monotony of certain shots. Up to 1919

B. was governed by the B. Association (founded 1885) and by the B. Control Club (founded 1903), but there was confusion between the rules formulated by each body. In 1919 an amalgamation took place under the title of the B. Association and Control Council, with the earl of Lonsdale as president. Since that time a great number of associations in all parts of the world have become affiliated to the Control Council. The first business of the council was to draw up a single code of rules, which has remained in force with only 2 revisions. In 1925 the council introduced a rule limiting consecutive hazards to 25 in order to prevent exploitation of the red-ball game. In the 1926 championship Reece first discovered the 'pendulum' stroke, and he was able to run up a record break of 1151, made mostly from 568 consecutive cannons. To avoid the future exploitation of the cannon sequence, an amendment to the rules was made limiting consecutive direct cannons to 35. A direct cannon is defined as being any cannon other than that made by the cue-ball striking the cushion after making contact with the first ball, and before making contact with the second. One of the most popular moves of the Control Council was to institute a Brit. Empire amateur B. championship in 1926. In 1929 interest in B. centred on C. McConachy, New Zealand champion, and the brothers Lindrum, who came on a tour to England. They were, however, not allowed to enter for the Eng. championship, but with the exception of F. Lindrum, the Australian champion, who was indisposed in England, they gave some remarkable performances. W. Lindrum scored 32 four-figure breaks during the tour, one being the record break of 3262. In 1932 he estab. a new record with a break of 4137. On Jan. 14, 1930, he met Joe Davis, the Eng. champion, and after a fortnight's play scored 29,056 points against Davis's 26,172. Davis maintained his position as Eng. champion, defeating Newman in 1938 and again in 1939, with a walk-over in 1946.

B. proper is divided into 2 distinct kinds: the Eng. game, as played, on a table with 6 pockets, in Great Britain and her dependencies all over the world; and the Fr. form, played, on a pocketless table, in the prin. European cities and in America.

English Billiards. The table consists of a mahogany or other hard wood frame, standing upon 6 legs sufficiently strong to support the massive weight of 5 slate slabs each measuring 2½ ft. by 6 ft. 1½ in., which, when proved by the aid of a spirit-level to be absolutely true all over, are covered with a green cloth of fine texture, and form the bed, at a height of 2 ft. 8 in. from the floor. The playing surface is bounded by cushions, covered with the same material, with openings at each corner and in the centre of its 2 sides (making 6 in all) to allow of the balls dropping into the hanging pockets. The surface of the table is marked out as follows: a baulk line is drawn 29 in. from the face of the bottom cushion and parallel

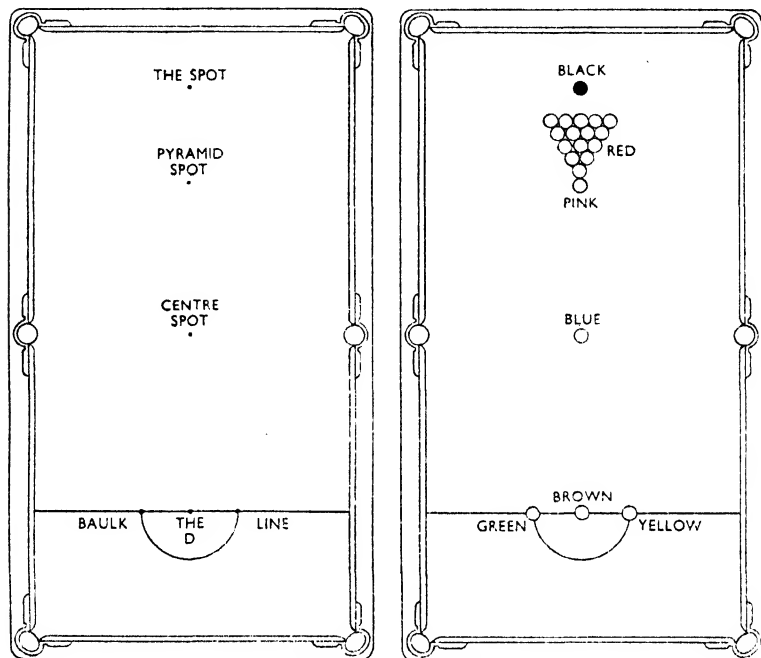
to it; the intervening space being termed the baulk. A semicircle, called the D, is described in baulk, striking from the baulk line with a radius of 11½ in. Spots, of black court plaster, are placed (on an imaginary line down the centre of the table) at 12½ in. from the face of the top cushion (the spot), another half way between the middle pockets (centre spot), and a third midway between the centre spot and the top cushion. Also spots are commonly placed on the baulk-line, at its exact centre, and at the intersecting ends of the D. Cues are made of old and seasoned wood, ash being generally used. They vary in weight from 14 oz. to 18 oz. or more. The striking end, on which is the leathern tip, is from 7½ to 8 in. in diameter. The length is about 4 ft. 9 in., but it varies according to the build and fancy of the user. The butt end is about 1½ in. and is often spliced with some heavier wood to give balance. Three balls are used, a red and 2 white, one of the latter being distinguished by a spot for easy identification throughout a game; hence one player is 'spot' and the other 'plain.' They should measure 2½ in. in diameter, and are either cut out of ivory, or made from compositions known respectively as bonzoline and crystalate. Two other implements are sometimes requisitioned, the half butt and the butt, for playing a ball when at an inconvenient distance from the striker. Points are scored either by the cannon; the cue (striker's) ball touching both object balls in its course; or by the losing and winning hazard. The losing hazard is made by the cue ball striking one of the object balls and going off into a pocket; the winning hazard consists in pocketing one of the object balls by striking the cue ball against it. The cannon counts 2; going in off, or pocketing, the white ball, 2; the red, 3. It is also possible to make combinations of these scores from one shot. The usual amateur game is '100 up.' A game is most frequently contested by 2 persons, but four-handed ones are sometimes played. A player continues until he fails to score, when he makes way for his opponent, and his 'break' is ended.

English Pool and Pyramids. The ordinary pool game consists of 2 or more players, each playing with a different-coloured ball in the following order: white, red, yellow, green, brown, blue, pink, spot-white, spot-red, spot-yellow, spot-green, and spot-brown. Each participant in the pool endeavours to 'pot' or pocket his opponent's ball, the one 'potted' losing a 'life' which usually possesses a monetary value, generally one-third that of the entrance to the pool. The game is commenced by a white going on the top spot, red playing upon it from baulk; the others playing upon each other in the order indicated. Pyramids consists of 15 red balls placed at the top end of the table in the form of a triangle, and is played by 2 players using the same white cue ball alternately. He who pots the most balls wins the game. It is usual to receive so much for each ball potted, double on the last one, and a stake on the

game. When more than 2 persons compete, it is designated 'shell-out.' Other varieties of pool are Snooker, Russian, Black, Skittle, Pin, Cork, and Indian Pool. The last-named is the only Eng. variety into which cannon play enters.

Snooker is played by 2 players, or 4 players in 2 partnerships, with 15 red and 6 coloured balls and the striking ball, white. The red is first potted, and this

form of B. is played upon a pocketless table, 9 ft. by 4½ ft., or for championship games, 10 ft. by 5 ft. and is confined strictly to cannon-play, or, as it is usually termed, carom, from the Fr. name, *carambolage*. Three balls are used, one red and two white, which are larger and heavier than those used in Eng. B. and the cues more powerful. The somewhat coarser nap of the cloth causes the balls to



THE BILLIARD TABLE

Left, spots and markings for billiards; right, arrangement of balls for snooker

entitles the player to pot any coloured ball, which is returned to its specific spot on the table. This procedure is followed, red and coloured alternately, until all reds are potted, leaving on the table only the coloured balls which are then potted in the following order, and with the scoring values shown: yellow (2), green (3), brown (4), blue (5), pink (6), black (7). The same values count for colours potted in the first part of the game, reds gaining 1 point each. An amateur championship of snooker was inaugurated by the B. Association in 1916 and a professional championship by the Control Council in 1927. The rules of snooker were revised in 1920 and again in 1926.

French and American Billiards. This

run slower, and they being, as stated, larger and heavier, more 'work' can be got upon them. Every type of game played on the pocketless table is commenced by placing the red ball upon a spot near the top cushion, and the 2 whites occupy parallel positions at stated points spotted within the lower half. The cue ball, in opening a game, must be played at the red, the endeavour of the striker being to bring the balls together so as to control them in a sequence of cannons. Each cannon counts one, and the player continues his break until he fails to score. The proficiency acquired by professionals like Vignaux on the continent and Slosson and Frank Ives in America caused the authorities controlling Fr. B., especially

in America, to devise restrictions in order to keep down the enormous sequences of cannons. Thus the game has become divided into 3 varieties: the plain cannon game, the corners lined off and the push stroke barred, and the baulk-line game, which latter can be varied according to the fancy of the players. An offshoot of the game proper is the three-cushion-cannon type; the cue ball having to strike 3 or more cushions before it can cannon on to the second object ball.

American Pool. Amer. or 15-ball pool is played upon the ordinary 6-pocket table, and the 15 balls, each bearing a number, are set after the manner in Eng. pyramids; a deep red ball (the one marked with the highest number—15) is placed upon the pyramid spot and forms the apex of the triangle pointing towards the baulk end of the table. The player endeavours to pocket as many of the object balls as possible with the white cue ball. The figures marked on each ball count towards the score, so it is a most important point to know the exact situation of the balls bearing the highest numbers. The player with the highest aggregate, after the last ball is potted, wins. Another form of this game is known as Continuous Pool—the one who first reaches 100 being the winner. Each time the whole of the balls are potted they are reset upon the table as for a fresh game, and play continues until one of the participants has scored the desired 100. Other varieties played in the States are Chicago and Bottle Pool.

Among the leading exponents of the game in Great Britain have been J. Roberts, W. Cook, Mitchell, C. Dawson, Diggle, Stevenson, Melbourne, Inman, Reece, Davis, Willie Smith, T. Newman, and H. Lindrum.

Bibliography. J. P. Mannock, *Billiards Expounded*, 1904; A. F. Peall, *All about Billiards*, 1925; A. D. Macmillan, *Everybody's Billiard Book*, 1925; Joe Davis, *Billiards Up to Date*, 1928; H. Lindrum, *Billiards and Snooker for Amateurs*, 1948.

Billings, a city and the cap. of Yellowstone co., Montana, U.S.A., on the N. Pacific railway. It is noted for sheep and cattle raising. Pop. 23,200.

Billings, Josh, see SHAW, HENRY WHEELER.

Billings, Robert William (1813-74), Eng. architect and author, b. in London. He became a pupil of John Britton, a topographical draughtsman, when he was 13, and during the 7 years of his apprenticeship he developed a taste for illustration. In 1837 he illustrated a *History and Description of St. Paul's Cathedral*. In 1839 he illustrated Mackenzie's *Churches of London*, also assisted Sir Jeffry Wyattville with drawings of Windsor Castle. His greatest achievement was his work *Baronial and Ecclesiastical Antiquities of Scotland*. He directed the restoration of the chapel at Edinburgh Castle, and the Douglas room in Stirling Castle.

Billingsgate, a fish market in London, situated on the banks of the Thames, close to London Bridge, and to the W. of the

Custom House. It was opened in 1558 as a landing-stage for provisions, and was estab. in 1699 as a free and open fish market. It was rebuilt in 1852, and again in 1874. The name of B. has long been a synonym for abusive language.

Billingham, urban dist. of Durham, England, on the Tees, almost opposite Middlesbrough, with pop. of 21,000. It has large iron and steel works, besides the works of the Metal Oxygen Company, and other works belonging to Imperial Chemical Industries, the beginnings of which were gov. factories set up during the First World War when the place was only a vil.

Billington (née Wechsol), Elizabeth (c. 1768-1813), Eng. singer, b. in Soho, London. She was the daughter of a Ger. musician, from whom she received her first musical training. She was a child of 8 years when she made her first appearance as a pianist at the Haymarket. She commenced her singing career when she was 14, and about 2 years after she secretly married her singing-master, a Mr. B. The couple went to live in Dublin, and it was there that she made her début in opera, taking the part of Euryclea. In 1786 she returned to London and accepted an engagement at Covent Garden, at a salary unheard of at that time. Reigning favourite in London (1786-94), and on the Continent (1794-96), and in London again (1796-1811).

Billion Dollar Congress, the 51st Congress of the U.S.A. which came into power immediately after the passing of the McKinley Tariff Act of 1890 and was popularly so called because it appropriated roughly a total amount of a billion (thousand million) dollars during its 2 sessions to meet the excessive increase in national expenditure consequent on Republican legislation.

Billiton, is, belonging to the Netherlands E. Indies, situated between Borneo and Banca. It is about 53 m. long, 44 m. broad, and in area 1800 sq. m. Its coast is fringed with coral reefs and rocks, which render it difficult of access. It is marshy and sandy, but the interior is somewhat hilly, being at an altitude of nearly 3000 ft. The is. is noted for its tin mines, numbering over 80. The exports are rice, sago, nuts, gum, tortoise-shell, etc. Pandang is the chief t.n., and Tandjong is the harbour. Pop. 75,000, of whom a quarter are Chinese immigrants.

Billon, a Ger. coin-alloy of copper and silver, and in which the base metal greatly predominates. Usually one part of gold or silver to three of copper.

Billot, Jean Baptiste (1828-1907), Fr. general. He served with great distinction in Algeria until he was recalled to take command of the 18th Corps d'Armée on the outbreak of the Franco-Prussian war. He was elected a life senator in 1875, and was minister of war in the de Freycinet Cabinet.

Billroth, Theodor (1829-94), Ger. surgeon, b. at Bergen. He took his doctor's degree at Berlin, but his chief work was done in Vienna. During the Franco-German war he served voluntarily in the

military hospitals, and his work there, together with a famous speech on the war budget, made him instrumental in bringing about sev. reforms in the transport and treatment of the wounded. He wrote *Allgemeine chirurgische Pathologie und Therapie*.

Bilma, an oasis in Sahara on the route from Tripoli to Kuka. It is noted for its salt mines.

Bilney, Thomas, Eng. preacher and martyr, b. probably near Norwich about 1495. His education took place at Trinity College, Cambridge, and his ordination in 1519. He preached against formalism, and the worship of saints and relics; and his saintly influence caused such men as Latimer and Matthew Parker to be won over. In 1525 he was licensed to preach in the Ely diocese, and, while orthodox in the main, accepting the pope's authority, he still denounced the saint and relic worship. In 1527 he was tried by Wolsey as a heretic, and was imprisoned for a year in the Tower. He again began his preaching, but was once more condemned. He was burned at the stake in Norwich, 1531.

Biloculina, name given by d'Orbigny to a genus of minute protozoans of the family Miliolidae and order Testacea. They are marine animals. B., in geology, are a genus of Foraminifera which are found in the tertiary deposits of the North Sea.

Biloxi, city in Harrison co., Mississippi, U.S.A. It is on a branch line of the Louisville and Nashville railway, and is a summer and winter resort for the residents of Mobile and New Orleans. It does a trade in packing and shipping fruit, vegetables, and oysters. Pop. 17,400.

Bilsthorpe, a vil. of Nottingham, England, in Sherwood Forest. Coal is worked here.

Bilston, tn. of Staffordshire, England. It is 3 or 4 m. from Wolverhampton, and is one of the iron-smelting centres. There are considerable manufs., which consist of heavy iron goods—bars, machinery, engines, bedsteads, iron and brass castings, wire, etc.—tin, enamelled goods, japanned ware, and pottery. A hard stone is found in the neighbourhood which is utilised for grindstones, and also a fine sand for casting, is obtained. Pop. 31,000.

Bima, seaport, and the cap. of the is. Sumbawa, belonging to the Netherlands E. Indies. The is. is specially renowned for its teak forests and tamarinds. The exports are timber and horses.

Bimbia, a riv. of W. Africa, which enters the bight of Biafra, to the W. of the Kamerun R. It is known in its upper course as the Mungo R.

Bimetalism, the employment of both silver and gold coins as standard money or legal tender. The use of coins of both metals, as issued in the United Kingdom in 1946, pending issue of cupro-nickel currency, does not constitute B., if the standard is gold, and the silver and bronze coins merely tokens. That is to say, the value of the silver in 20 shillings is by no means equal to the value of a sovereign;

the silver coins are minted for convenience in dealing with small amounts. The distinction is marked by silver not being altogether convertible, as it is not legal tender for amounts over 40 shillings, and, on the other hand, silver may not be taken to the mint and freely converted into coinage. When gold and silver are both standard money, more or less freely convertible, a competition is set up which has disturbing effects on trade. Let it be supposed that by reason of new discoveries of metal the relative abundance of silver suddenly becomes greater. As metal it becomes cheaper, it is freely offered for minting, and the value of other commodities, including gold, increases; because abundance of money invariably means a rise in prices generally. Gresham's law, which may be shortly stated as 'bad money drives out good,' now comes into operation. Gold will be used in dealing with other countries where the gold standard only is maintained, and is thus driven out of the country. It has been observed that quite a small decrease in the relative price of silver is sufficient to encourage its importation in large quantities into countries where it is recognised as legal tender, that is to say, where the amount of gold or other commodities to be obtained for it is greater in value than in non-silver-standard countries. It is obvious, therefore, that the only way of preventing a large and disturbing transportation of one element of a double coinage is an agreement, internationally, to recognise both metals in the same ratio of value. This, then, is what the advocates of B. desired. It was hoped that if all the commercially important countries agreed to fix the ratio of the value of gold and silver at 15½ to 1, it would be possible to maintain that ratio by regulating the demand, i.e. by increasing or decreasing the coinage of gold or silver, and so stimulating or discouraging supply. The advantages claimed for a fixed ratio are greater stability in value of commodities generally, since there is likely to be a compensatory supply of one metal if the production of the other diminishes; the avoidance of depending on one metal, the supply of which may not be equal to the work required to be done; and the possibility of establishing a world currency, with consequent advantages to commerce universally. The great weakness of the case for B. has been the difficulty of establishing and guaranteeing the permanency of the desired fixed ratio. The influence of many important countries in adjusting the supply and demand of the precious metals would no doubt be enormous, but the conflicting interests of different countries would create difficulties as to the manner in which that influence should be exerted. This is well illustrated by the conditions which led to the bimetallic controversy. Between 1848 and 1860 great discoveries of gold took place in California and Australia. France, America, and the prin. European countries except Britain had a double coinage standard, and gold was minted in large quantities, a large amount of silver

being exported to India and other countries having a silver standard only. After 1870 the production of gold diminished, and that of silver increased enormously. The consequence was a general rush to mint silver and the operation of Gresham's law in causing the exportation of gold. An attempt to restrict the coinage of silver threw it on the market as metal, and caused a further fall in price. The Indian Gov., as large holders of silver, and the silver producers of America, thus suffered considerable loss. A great agitation now sprang up, chiefly in America, to bring about an international agreement to fix a ratio and make a double standard universal. Money conferences were held in Paris in 1878 and 1881, but without effect. Through the efforts of the U.S.A., another conference was held at Brussels in 1892, but the opposition of Britain and Germany again prevented the establishment of a silver standard. An attempt was then made in America to establish a bimetallic standard for that country independently of Europe, and the presidential elections of 1896 and 1900 were fought mainly on that issue. The Gold Standard Act of 1900, however, placed the country on a monometallic gold standard. By 1914 a gold standard was universal in all countries except China, which maintained a silver standard. The general adoption of gold dates back to the depreciation of silver after 1873. In this year Germany reorganised her currency on a gold basis, and by selling silver and buying gold on a large scale so affected the bimetallic countries of the Lat. Union that they suspended the free coinage of silver in order to protect their stock of gold. They were thus forced into a regime of incomplete or 'limping' B., which hardly differs in practice from the monometallic gold standard. Experience has shown that the 2 systems cannot exist side by side, for the bimetallic country suffers a depletion alternately of the metal, of which the monometallic countries are most in need, and receives in exchange the unwanted metal. The theoretic bimetallics, however, had hoped for an international agreement establishing the free coinage of both gold and silver in all civilised countries. In the first half of the nineteenth century, when B. was confined to France and a few other countries, a ratio of 1 to 15½ was maintained between gold and silver. This ratio successfully withstood the gold discoveries of 1850 and the increased ann. output, but Germany's demand for fifty millions in gold after the Franco-Prussian war decided the fate of B. At the Genoa Conference in Apr. 1922 it was decided that all countries must stabilise their currencies on a gold basis. To-day all countries have only one standard, usually gold. The idea of B. was revived, though, in a somewhat different form from the nineteenth-century agitation in America, during the economic crisis of 1931-32. Its introduction would greatly increase the value of silver; but the idea has not been seriously entertained in recent years. The bimetallic controversy may be

studied from the point of view of the bimetallicist in *International Bimetallism* by F. A. Walker; the opposing side is represented by Giffen in *The Case against Bimetallism*; whilst an impartial view is adopted by Leonard Darwin in *Bimetallism*.

Bimlipatam, chief port of the Vizagapatam dist. in the Madras presidency, India. It is situated on the bay of Bengal, about 18 m. N. of Vizagapatam. There is a large coasting trade, and its chief exports are sugar and oil seeds. Pop. 10,000.

Binan, or **Vinan**, pueblo of Laguna prov., Luzon, Philippine Is., on a trib. of Laguna de Bay, 41 m. from Santa Cruz. Very fertile. Pop. 11,000.

Binary Theory, a generalisation in chem. which is now of historical interest only. It assumed that every chemical compound consisted of 2 parts which might be elements, or groups acting as elements, one element or group being electro-positive and the other electro-negative. The theory has been discarded.

Binche, an industrial tm. of Belgium, situated in the prov. of Hainaut, 10 m. E.S.E. of Mons. Pop. 15,000.

Binck, or **Bink**, **Jacob** (c. 1500-c. 1568), Ger. painter and engraver, b. at Cologne. He studied under Dürer. His engraving is unequal; among his best productions may be named the 'Divinities of the Fable' and his various portraits.

Bindusara (297-272 B.C.), second Mauryan emperor of India; son of the conqueror Chandragupta, and father of Asoka, who succeeded him.



BINDWEED

Bindweed, name given to sev. plants of the order Convolvulaceæ, which climb by means of twining stems and are natives of Britain. The name is most often applied to the sweet-scented *Convolvulus arvensis*, or lesser B. *C. sepium*, larger B., often occurs in hedges, and is fertilised chiefly by means of a hawkmoth; *C. soldanella*, sea B., grows on the coast. The name black B. is given to *Polygonum convolvulus*, a species of Polygonaceæ.

Binet-Simon Test, in mental pathology, is a method of testing the intelligence of persons who are mentally defective, by putting to them a series of questions and getting them to perform a number of simple exercises, such as drawing, which can normally be performed by any children of various ages. The mentally defective may, by this test, be classified as possessing the degree of intelligence of a child of 4, 5, 6, etc. years. The test is named after Alfred Binet (1857-1911), Fr. psychologist, director of the laboratory of psychology at the Sorbonne. Much of his work was founded on the application, in certain conditions, of hypnotism. See INTELLIGENCE TESTS.

Bingen, tn. of Rhine-Palatinate in Germany. It is situated on the l. b. of the Rhine, about 15 m. W. of Mainz, and 40 m. S.E. of Coblenz. Near the tn. is the well-known Bingerloch, a whirlpool, which was at one time a most dangerous passage for navigation, until 1834, when the sunken rocks were blasted, leaving a wide channel of 210 ft. The Mäuseturm, or Mouse-tower, is situated on a rock in mid stream, the scene of the story of Bishop Hatto. The remains of a castle where the Emperor Henry IV. was imprisoned are in the neighbourhood, and almost opposite B. is the statue Germania, which was erected in 1877-83 in commemoration of the war in 1870. B. is the centre of a wine-producing neighbourhood, and is also the market for the sale thereof. It is the seat of a technical school with 900 students. The Festhalle was built in 1913. Pop. 12,000.

Binger, Louis Gustav, Fr. officer and explorer, b. at Strasburg in 1856. He studied the language of the Bambara in the Niger states, and pub. his work on the Niger. In 1887 he commenced his expedition from Senegal up to the Niger, and 2 years later he arrived at Grand Bassam. He described this journey in his work *Du Niger au golfe de Guinée par le pays de Kong et le Mossi*, pub. in 1891. In 1892 he again visited the Guinea Coast for the purpose of superintending the forming of the Eng. and Fr. boundaries. Appointed governor of the Ivory Coast, 1893. See Henri Mouézy, *Assinie et le royaume de Krinjabo* (Paris), 1942.

Bingerville, tn. of W. Central Africa, situated a little to the N.W. of Grand Bassam. Named after Louis Binger (q.v.). It is now the cap. of the Fr. Ivory Coast, having been constituted in Nov. 1900, and is inhabited solely by officials. Pop. 750.

Bingham, Joseph (1668-1723), Eng. divine, b. at Wakefield in Yorkshire. He was educated at Oxford, and was made fellow of his college in 1689, and tutor in 1691. After some time he was forced to resign his fellowship, and leave the univ. because of an accusation brought against him of heresy. This originated from a sermon which he preached upon the terms 'Person' and 'Substance' as applied to the Trinity. Shortly after, a living was given him at Headborough, close to Winchester, and it was here that he wrote his great work, entitled *Origines*

Ecclesiasticæ, or Antiquities of the Christian Church, in 10 vols., 1708-22.

Bingham, small mrkt. tn. of Notts., England, 8 m. from Nottingham. Pop. 1600.

Binghamton, co. seat of Broome co., New York, U.S.A., situated at the junction of the Chenango and Susquehanna Rs., and 80 m. from Syracuse. Manufs. boots and shoes, tobacco, cigars, flour, engines, etc. Pop. 77,000.

Bingley, mrkt. tn. in W. Riding, Yorkshire, England. It stands on the Aire, 6 m. from Bradford, and 15 m. from Leeds. Its manufs. are woollen goods, worsted, cotton, paper; there are extensive iron works in the neighbourhood. It possesses sev. fine buildings; among them are technical schools, a free library, a cottage hospital, etc. Pop. 21,000.

Binh-Dinh, tn. of Annam, Fr. Indo-China, 11 m. from the coast and 205 m. S.E. of Hue. Kwihon or Quinon is its port. Pop. 75,000.

Bink, Jacob, see BINCK.

Binmaley, tn. in the prov. of Pangasinan, Luzon, Philippine Is., 5 m. W. of Dagupan. Has important fisheries; manufs. salt, pottery, and wine. Pop. 16,000.

Binnacle, the framework or case or box in which is kept the nautical compass. It is fitted with lighting apparatus, so that the compass can be seen at night. It is as a rule placed on the deck of a ship, in front of the steersman. A double B. is occasionally carried, one on each side of the steering wheel. On board a man-of-war, one B. is for the use of the officer on watch, while the man at the wheel has the other. At one time the B. was just a locker with sev. compartments, to contain the compass, lights, watch-glasses, etc. In the middle div. was placed the small lamp, and as the sides were of glass, a light could be thrown on the compass all the time at night. The modern B. has been improved, for it is so constructed that the compass needle is made proof against vibration or shocks.

Binney, Edward William (1812-81), Eng. geologist, b. at Morton, Notts. He was articled to a solicitor in Chesterfield, and in 1836 went to Manchester, where he practised successfully as a lawyer. His leisure was devoted to the study of geological phenomena of the dist. Chiefly through his influence the Manchester Geological Society was formed in 1838. From 1857 to 1859 he was president of the society, and also from 1865 to 1867. In 1853 he was elected a fellow of the Royal Society. He was considered to possess the most accurate knowledge of the coalfields of Cheshire and Lancashire.

Binney, Thomas (1798-1874), Eng. Congregational minister, b. at Newcastle. He received his education at an ordinary day school, and then was apprenticed to a bookseller for 7 years. During this time he studied Lat. and Gk. Later he entered a theological college to prepare for the ministry. His first call was to the Isle of Wight in 1824. In 1829 he took up work at Weigh House Chapel, London. He

was strongly against the Church of England. In 1845 he visited Canada, and in 1857 he went to Australia. He ranked high among nonconformists of his time.

Binnie, Sir Alexander Richardson (1839-1917), Eng. engineer, b. in London, educated at private schools and under J. F. Bateman, F.R.S., president of the Institute of Civil Engineers; was engaged on Welsh railways, 1862-66; in Indian Public Works Dept., 1868-74; was appointed engineer to the city of Bradford, 1875; and chief engineer to the L.C.C., 1890-1901; his engineering feats include the Blackwall Tunnel; Bradford Waterworks; and Barking Road Bridge.

Binocular, see Vision.

Binoculus, term formerly used instead of *Apus* for a genus of phyllopodous crustacea of the family Apodidae. They inhabit fresh-water ditches, pools, and stagnant waters, and are gregarious. Males are seldom produced, the females carry their eggs about on specially modified appendages, and these eggs preserve the living principle for a long time in a dry state.

Binomial (Lat. *bis*, twice, *nomen*, a name), the name given in algebra to an expression consisting of 2 terms, as $a+b$, $a-b$. The *binomial theorem* is a method of expanding any power of a B. expression into a series. It is given in the following formula, where n may be any power integral or fractional, positive or negative, rational or irrational:

$$(x+y)^n = x^n + nx^{n-1}y + \frac{n(n-1)}{1.2}x^{n-2}y^2 + \frac{n(n-1)(n-2)}{1.2.3}x^{n-3}y^3 + \dots + y^n.$$

Thus, the expansion of

$(x+y)^5$ is $x^5 + 5x^4y + \frac{5.4}{1.2}x^3y^2 + \frac{5.4.3}{1.2.3}x^2y^3 + \frac{5.4.3.2}{1.2.3.4}xy^4 + \frac{5.4.3.2.1}{1.2.3.4.5}y^5$ or $x^5 + 5x^4y + 10x^3y^2 + 10x^2y^3 + 5xy^4 + y^5$. The theorem owes its origin to Sir Isaac Newton, who first pub. it in 1676.

Bintang, the chief is. of the Riau archipelago, in the Netherlands E. Indies. It is situated on the S. of the strait of Singapore. The coast is beset with rocks and small is., while the interior of the is. is low and marshy. Pepper, gambier, rubber, and rice are cultivated and exported. There is also a trade in timber. The chief port is Tanjong Pinang. Pop. 18,500.

Binturong, or 'black bear cat,' a small black animal, found in India, Sumatra, Java, etc. It possesses a large head, and a thick long tail, prehensile at the tip. Its habits are nocturnal and solitary, slow and crouching. It feeds upon birds and insects. Its howl is very loud. It is easily tamed.

Binué, see BENUÉ.

Binyon, Laurence (1869-1943), Eng. poet and orientalist, son of the Rev. F. B., was educated at St. Paul's School and Trinity College, Oxford, and won the Newdigate prize in 1890. He received an appointment in the dept. of printed

books at the Brit. Museum in 1893, was transferred to the dept. of prints and drawings in 1895, and became assistant keeper in 1909. He pub. sev. books of poetry, showing traditionalist tendencies; but will probably be best remembered as the greatest authority on oriental art. He compiled the official catalogues of Jap. colour prints in the Brit. Museum, and Chinese frescoes in the Eumorfopoulos collection; also the four-vol. catalogue of Eng. drawings, begun in 1898. During his 20 years in charge of the subdept. of oriental prints and drawings, he made it the most representative in Europe. His larger and harder task was to build up a really representative collection on historical lines, in accordance with the tradition of the museum, of Chinese and Jap. painting. Far Eastern painting was necessarily the central point of the collection, and the main subject of his book, *Painting in the Far East* (first pub. in 1908), which still holds its unique place as an introduction to the subject. This book also contains sections on Indian and Persian painting, and these subjects were also treated by him in later publications, especially in the *Court Painters of the Moguls*, pub. in collaboration with Sir Thomas Arnold; in the museum collection of Nizami's *Khamseh* and in his lectures at Harvard (1934); which were afterwards pub. as *The Spirit of Man in Asian Art*. As a result of his stay in Japan in 1929, with shorter visits to China and Angkor, he treated the whole range of E. art. In his later years he wrote a life of Akbar (1932). No one in Britain did more to further an interest in the arts of the E. and through them an understanding of the spiritual and cultural ideals of those great civilisations. In 1926 he brought out the *Letters of Maurice Hewlett*. His taste in recent verse is recorded in a *Golden Treasury of Modern Lyrics* (1924), and he added a supplementary fifth book to Palgrave's *Golden Treasury*. He also trans. Dante's *Inferno* into Eng. verse, 1933, and the *Purgatorio*, 1938.

Select Bibliography: *Lyric Poems*, 1894; *London Visions*, 1895; *Porphyryion*, 1898; *Death of Adam*, 1903; *England*, 1909; *The Anvil*, 1915; *The Secret*, 1920; *The Idols*, 1927. Plays: *Paris and Oenone*, 1906; *Attila*, 1907; *Arthur*, 1922; *Boadicea*, 1925. *Belles Lettres: The Flight of the Dragon*, 1911; *Painting in the Far East*, 1913; *Botticelli*, 1913; *Court Painters of the Grand Mogul*, 1921; *Drawings and Engravings of W. Blake*, 1922; *English Water Colours*, 1933.

Biobio, the largest riv. in Chile, S. America. It is 220 m. long. Its source is in the volcano of Antuco, in the Andes, and it takes a N.W. direction to Concepción, a port on the Pacific coast. It is more than 2 m. wide at its mouth, and is navigable for over 100 m. B. is also the name of a prov. of S. Chile. It has an area of 4158 sq. m., and is divided into 3 depts. The cap. is Los Angeles.

Biochemistry is that section of chem. which investigates the chemical changes and products evolved in the life processes

of plants and animals. It includes the investigation of the nature of living matter and the chemical processes of life and death. Not only is it concerned with the composition of the substances found in the organism, but also with their method of manufacture. In this inquiry into the chemical activity of the organism, B. is intimately connected with the origin of life, and some bio-chemists think that it may be possible to synthesise living organisms.

Physical B. has helped to solve the problem of the entry of food solution into plants and individual cells by osmosis, and has shown the importance of hydrogen ion concentration (P_{H} value) in metabolism, respiration, and in culture media. The action of isotonic solutions in blood transfusion and in the microscopic examination of living cells, and the action of hypertonic solutions in effecting the development of unfertilised eggs of lower plants and animals, are due to the phenomena investigated by this section of B.

Colloidal chem. has ended much controversy on the nature of protoplasm by showing that the theories advanced were not contradictory since, in virtue of its structure as a colloidal medium, protoplasm may pass through different phases affecting its physical appearance. Like most colloids, it is semipermeable, a characteristic absolutely essential to organic structure and nutrition as we know them.

Physiological chem. is concerned with normal metabolism. Foods taken in by living organisms are elaborated into body material or broken down with the liberation of energy. The elaboration (anabolism) and the breaking down (katabolism) together constitute metabolism and proceed at the same time, and intimately connected with it are 2 classes of compounds—enzymes and hormones. Enzymes occur in all the digestive juices and are able to convert certain foods into digestible form. The conversion of proteins, fats, and starches into soluble compounds in both plants and animals is brought about by various enzymes, which resemble catalysts in that they remain unchanged at the end of the reaction. Bacteria and yeast secrete enzymes of industrial importance and the action of many of these has been very extensively investigated (e.g. the fermentation of sugar by yeast).

Hormones are chemical substances liberated into, and circulated in, the blood. Their use seems to be to aid various parts of the body to function normally. The pancreas is unable to secrete pancreatic juice unless it receives from the intestine, in the blood stream, the hormone *secretin* secreted by cells of the intestinal membrane. The secretions of the ductless glands were first regarded as hormones, but the specific term 'endocrine' is now generally applied to them, and the nature and effect of these secretions are the subjects of extensive research. It is known that they may produce marked effects on metabolism and

general health. Under certain conditions, extract of thyroid gland injected into tadpoles will cause precocious metamorphosis, whereas deficiency of thyroid secretion arrests development. The secretion of the pituitary gland also has a marked effect on metabolism. Other endocrine secretions under investigation are those of parathyroid, adrenal, suprarenal, and genital glands; their secretions affect general health to a great extent. Since interference with metabolism will affect at least some organs of the body, it is not surprising that nervous disorders are frequently associated with abnormal endocrine conditions.

Research on foods has shown that disease and premature death occur unless substances called vitamins are included in the normal diet. These are found in living organisms, but in minute quantities, and are so readily destroyed that it was a long and difficult task to isolate any of them. Because of this original inability to isolate and analyse vitamins, those discovered were provisionally named A, B, C, D, E, etc. The constitution of some of the vitamins has been elucidated by Karrer and other workers, and one or two of them have been synthesised in the laboratory.

By its investigation of metabolism, B. is connected with medicine, for abnormal metabolism is pathological, and the determination of deleterious substances during disease has linked B. with chemotherapy—the treatment of disease by the injection of compounds which will procure immunity. Research is being carried out on the effect of compounds of arsenic on the organism (*Trypanosoma gambiense*), which causes sleeping-sickness. Injections of salvarsan kill the Spirochaeta causing syphilis and relapsing fever. The flat worm *Bilharzia* is killed by tartar emetic, and the action of a gold compound, called sanocrysin, has been tested with some success on the tubercle bacillus. Penicillin, a Brit. discovery, is extremely efficacious against staphylococci, and paludrine—another Brit. discovery—shows great promise in not only curing but preventing malaria.

Biogenesis, a term used to express the theory that all forms of life owe their origin to antecedent life ('omni vivum ex vivo'), as opposed to abiogenesis (q.v.), which maintains that it may be possible to produce life from inorganic matter. The terms are used in connection with a biological controversy which recurs from time to time, though Pasteur's refutation of abiogenesis is now usually regarded as conclusive, except perhaps in the case of viruses (q.v.). B. is also expressed by homogenesis, which means that the living organism produces by sexual reproduction, spore-formation, or partition organisms resembling the parent, though the resemblance to the immediate parent may not, of course, be exact. See BIOLOGY.

Biography (Gk. *bios*, life, *graphein*, writing), that branch of literature which deals with the hist. of the lives of individual men. The first known instance

of the use of the word *βιογραφία* is in the work of Damascius, a Gk. writer of the early sixth century. The word does not appear to have been used in England until the seventeenth century. Fuller, in his *Worthies*, 1662, referred to the 'biographers of these saints,' and in 1683 Dryden defined *biographia* as the 'history of particular men's lives,' in all parts of which 'Plutarch equally excelled.' B., in its most rudimentary form, exists in the early literature of all nations. The hist. of the lives of national heroes, coloured by popular imagination, may be traced in the myths of gods and giants and insuperable warriors. Jewish literature abounds in B., as it affects the hist. of the race. The O.T. is full of the lives of patriarchs, kings, prophets, and great women who left their work on the religious and social history of the Jews. The earliest examples of B. written with a conscious effort to narrate the true hist. of particular men, are probably to be found in Gk. literature. In Gk. and Rom. literature B. is generally a mere *curriculum vitæ*; the duty of the writer is to narrate, in strict historical sequence, the chief events of his hero's life. It often took the form of *laudationes funebres*, and the aim of the writer was strictly a moral one. His hero must either be an example or a warning. Every noble action is emphasised with grave eulogy; the consequence of every deed pointed out and if necessary censured. This form of writing gives opportunity for rhetoric, and for the introduction of lengthy dignified speeches, which deprive the work of any dramatic form, but add to its general moral tone. Xenophon's memoir of his master Socrates is one of the earliest Bs. that have come down to us from the Gks. By far the most interesting is the *Parallel Lives* of Plutarch (A.D. 46-120). The lives number 46, and the Gk. and Rom. heroes are arranged alternately as a parallel to each other. Plutarch excels all anc. writers of lives. His rare gift of sympathy with his subject, and his powers of selection and of seeing what is interesting, are only equalled by the best of modern biographers. North's translation appeared in 1579, and had a remarkable influence on the Elizabethan dramatists. Other Bs. of note, belonging to Gk. literature, are Philostratus's *Life of Apollonius of Tyana*, the Neo-Pythagorean saint, and his *Lives of the Sophists*; Diogenes Laertius's *Lives of the Philosophers* (third century); Eusebius's *Lives of the Sophists* (fourth century); and the *Life of Plato*, by Olympiodorus of Alexandria. The Augustan age of Rom. literature contains many fine specimens of B. *De Viribus Illustribus* of Cornelius Nepos (c. A.D. 655-730) is frequently historically inaccurate, but is of great interest. *The Life of Alexander the Great*, by Q. Curtius Rufus, is not so much biographical as historical, and is over-weighted with general reflections and rhetorical speeches. Tacitus's life of his father-in-law (*De vita et moribus Julii Agricolæ*), written c. A.D. 98, is a stately work, and contributes to our knowledge of the hist. of the times.

The *Lives of the Twelve Emperors*, from Cæsar to Domitian, written by Suetonius Tranquillus about A.D. 120, are rhetorical studies. Suetonius shows indifference to chronological exactness, and is by no means an impartial historian. Another B. of note is the monograph by Sallust (c. 668-720) on the conspiracy of Catiline. Saint Jerome's *Lives of the Fathers* belongs to a later period. The Bs. of the Middle Ages were frequently written in the cloister or the cell; and the subjects chosen were saints, martyrs, abbots, bishops, and the like. In England many Bs. of this kind were written in Lat. Bedo (673-735) wrote lives of St. Guthbert (one a metrical version of considerable length, and one in prose), and also *Lives of the Abbots of Wearmouth and Jarrow*, the material for which he found in certain anonymous lives of these saints. Aldhelm, bishop of Sherborne (d. 709), composed a prose treatise in praise of virginity, which he illustrated by the lives of a number of men and women—Scriptural characters, hermits, monks, and saints—examples of chastity. Other lives of interest to the student of Early Eng. literature are: *Vita Sancti Columbæ*, by St. Adamnan (625-704); *Vita Caroli Magni*, a life of Charlemagne, written about 820 by Eginhard; *Lives of the Saints*, by Ælfric; *Wulfstan*, by William of Malmesbury; *Wulfred of York*, by Eddius Stephanus; and *St. Guthlac*, by Felix. *The Life of Alfred*, by Asser, bishop of Sherborne, has the distinction of being the 'earliest B. of an Eng. layman.' During the fifteenth and sixteenth centuries there was a fair output of this species of writing, but the form and the scope of B. did not develop to any great extent. Lat. was frequently chosen as the medium of expression, and the style and form modelled on that of Livy and Sallust. The chief biographies to be noted here are: *Illustrium Majoris Britanniae Scriptorum Summarium*, 1584, by John Bale, 1495-1563; *De Viribus Illustribus*, and *Commentarii de Scriptoribus Britannicis*, by John Leland (d. 1552); a *Life of Sir Thomas More*, by his son-in-law, William Roper (1496-1578); a graceful *Life of Cardinal Wolsey*, by George Cavendish (1500-c. 1561), which remained in manuscript till the seventeenth century; and *History of the Life and Death of King Edward V. and the Usurpation of Richard III.*, by Sir Thomas More, written between 1513 and 1514, and printed in 1557. Bacon's *History of Henry VII.* appeared in 1621. In this an effort is made to analyse the motives and purposes of the chief actor, and everything is subordinated to or explained by his actions. In this analytic handling of his subject Bacon made a clear advance on the methods of his predecessors. All modern Bs., which aim at giving an artistic and truthful presentation of the life and character of an individual, must acknowledge their debt to the admirable *Lives* of Izaak Walton. This series began by the publication in 1640 of the *Life of Donna*, which was followed by the *Life of Sir Henry Wotton* in 1651; *Richard Hooker* in 1665;

George Herbert in 1670; and *Dr. Robert Saunderson* in 1678. Walton had a sympathetic understanding, and his pleasing style and the revelations of his own plans and kindly personality combine to make the *Lives* attractive to modern readers.

So far it will have been noticed that the men chosen as subjects of B. are those whose lives bear directly upon the hist. of the Church and State. Men of letters were not considered to be of such influence and importance as to warrant a B. Even Walton's heroes were not wholly scholars. Drummond of Hawthornden's *Notes on Conversations with Ben Jonson*, 1619, though not strictly speaking a B., revealed the character of a man of letters in conversation, and proved that a man's character may be revealed in his trivial as well as in his serious remarks. From this time the scope of B. began to expand. Anthony à Wood (1629-95) chose the wits of Oxford for the subject of his *Athenæ Oxonienses*; John Aubrey (1629-97) pleasantly sketched the lives of his immediate predecessors and his contemporaries in *Minutes of Lives*; Thomas Fuller (1608-1661) wrote extensively, with numerous digressions, of the notable men of each county in his *Worthies of England*, 1661. Mrs. Hutchinson, in *Memoirs of Colonel John Hutchinson* (1664-70, pub. 1806), wrote a panegyric of her husband, who had taken part in the Civil war. Thomas Sprat, bishop of Rochester (1636-1713), reverted to the old classic models in his *Life of Cowley*, 1668, where he expounded that all familiar anecdote was out of place in a B., and that moral effect was the thing to be aimed at. Before the end of the seventeenth century 2 lives of Milton were in print, one by Edward Phillips, pub. in 1694, and one by Toland, in 1699. Lord Herbert of Cherbury (1583-1648) and Anne Harrison, Lady Fanshawe (1625-80), were the earliest to write lives of themselves. Another early autobiography (1656) is that of Margaret Lucas, duchess of Newcastle, who also wrote a life of her husband in 1667. With these autobiographies must be noted certain diaries, which were, after all, autobiographies not intended for publication. The most important of these is the famous *Diary of Pepys* (1633-1703), written between 1660 and 1669. Its value was unrecognised till the nineteenth century, and an incomplete ed. was first pub. in 1825 by Lord Braybrooke. Notice must be paid to the *Diary of Evelyn*, written between 1641 and 1697; to Roger North's *Life of himself and Memoirs of his 3 brothers*, the Lord Keeper Guilford, Dr. John North, master of Trinity, and Sir Dudley, the Turkey merchant; and to Burnet's *History of his own Times*. B. attained its most perfect form at the end of the eighteenth century in James Boswell's *Life of Dr. Johnson*. The necessities of a good biographical writer are numerous. He must, of course, have a knowledge of the facts and access to authentic documents relating to the life of his hero. This is by no means all. Knowledge of facts and a strong predilection for moral platitudes were often,

as has been shown, the sole qualifications of anct. biographers. But the ideal modern biographer should not merely be in touch, through his own technical knowledge, with the work and ambitions of his hero; he should have a sympathetic understanding of his hero's character. He should be able so to present his hero that the reader is left with the feeling that he himself has known the man. Everything must be subordinated to the central figure; no incident, no person that does not influence the life or the character of the hero should be introduced. The biographer must possess a knowledge of psychology; he must be able to analyse motives, and to arrange his material and group his characters to the best effect. In fact, in order to reveal the personality of his portrait he must create as well as reproduce. *The Life of Dr. Johnson* is thought by many to have no rival in the whole realm of the world's literature. Boswell had an unbounded admiration for his hero; an intimate knowledge that would be hard to surpass; and the happy knack of an artist in selecting and grouping his material. As Carlyle says, the 'loose-flowing, careless-looking work is as a picture by one of Nature's own artists; the best possible resemblance of a Reality; like the image thereof in a clear mirror.' Among the Bs. written by men almost as great as their heroes, are most prominent Boccaccio's *Life of Dante*, Dean Stanley's *Life of Dr. Arnold*, and Lord Morley's *Life of Gladstone*. Excellent Bs. were written in great number during the nineteenth century. The great modern classics in this branch of literature are Southey's *Life of Nelson* and *Life of Wesley*; Lockhart's *Life of Scott*; Forster's *Life of Dickens*; Trevelyan's *Life of Macaulay*, and his *Life of Charles James Fox*; Carlyle's *Lives of John Sterling, Frederick the Great, Schiller, Oliver Cromwell*, etc.; Moore's *Life of Byron*; Mrs. Gaskell's *Life of Charlotte Brontë*; Sir Theodore Martin's *Life of the Prince Consort*, and Lowden's *Life of Shelley*. Cross deviated from the ordinary form of B. in his *Life of George Eliot*, 1884. He arranged her letters in chronological order, headed by brief introductions or explanations, allowing her character to reveal itself in her correspondence. Cross's method has by many writers been adapted and combined with a B. Mason, in his *Life of Grey*, 1744, was the first to insert familiar letters, written to intimate friends, for the purpose of illustrating the character of his hero. A great fault of some Bs. is the lack of the power of selection in the author. A great amount of industrious research and scholarship is put into the work, but the biographer fails to present a living portrait of his subject. An example of this kind of work is Masson's *Life of Milton*. Masson gives a mass of information about the politics and lives of Milton's contemporaries, and introduces in detail many people and incidents which only indirectly bear upon the life and character of the poet. Sidney Lee's *Life of Shakespeare* is one of the finest examples of that type of B. which

of necessity entails careful and scholarly research. During the nineteenth century all manner of men had their interest quickened in different branches of art and science; and numerous Bs., autobiographies, and memoirs, have been pub. Those have dealt with leading men in all walks of life. Bs. have often been written by specialists of specialists; these are of such a kind as to demand a certain amount of technical knowledge of the subject from the reader. Under this heading come lives of painters and artists, such as Jahn's *Life of Mozart*, Karasowski's *Life of Chopin*, and Woltmann's *Life of Hans Holbein*. Autobiographies have been written in great number by all manner of men and women; such as Gibbon, Hume, Franklin, Talleyrand, Harriet Martineau, Oliver Wendell Holmes, Leigh Hunt, Scott (in his *Journal*), Ruskin (*Præterita*), Carlyle (*Reminiscences*), Goethe (*Dichtung und Wahrheit*), Sir Henry Taylor, Edmund Gosse (*Father and Son*), etc. Bunyan's *Grace Abounding*, Thomas Browne's *Religio Medici*, and Newman's *Apologia*, are confessions of faith and revelations of the inward spiritual life of a man. Sometimes an autobiography has almost taken the form of fiction, as in Borrow's *Lavengro*. Halliwell-Phillips has said that the writing of modern Bs. has been 'carried to a wasteful and ridiculous excess.' This is true. Every politician, man of letters, actor, and millionaire has some admirer who goes into print on his behalf. It is now common for Bs. to be written during the life of the subject. Very little denomination has its heroes; and lives and memorials are continually being pub. of philanthropists, preachers, and missionaries. Such works are of purely ephemeral interest, and reach a very limited audience.

In the twentieth century one of the most remarkable Bs. is Monypenny and Buckle's *Benjamin Disraeli, Earl of Beaconsfield*, which appeared in 6 vols., 1910-20; and as a reference book on its subject, Morley's *Gladstone* suffers by comparison. Smaller Bs., however, became the fashion. B. in general has also on the whole been rendered more sincere and more readable by abolition of the conventional frontier between matters to be put in a life and other matters. Two Brit. monarchs have been subjected to candid treatment: in Lytton Strachey's one-vol. *Queen Victoria* (1921); and in Sir Sidney Lee's *Edward VII.*, in 2 vols. (1922-23). Lytton Strachey's *Eminent Victorians* (1918) is probably the most remarkable biographical work of its size; it is one small vol. dealing with 4 lives—Cardinal Manning, Florence Nightingale, Arnold of Rugby, and General Gordon. Bernard M. Allen's *Gordon and the Sudan* (1931) disposes of the malicious picture of Gordon presented by Lytton Strachey, whose conception of Gordon was based on a hasty generalisation from unreliable material. Indeed much of Strachey's work is marred by its straining after effect, as, e.g. in his sketches of Mme. du Deffand, Horace Walpole, and Frederick the Great, and above all in the cloying

study of *Elizabeth and Essex*. It may be said that Lytton Strachey has been the main influence in twentieth-century B., particularly in reaction against the formal official 'Life' of the preceding century, and the writing of biography has been one of the outstanding features of Eng. and Amer. authorship since the First World War. The growth of interest in psychology is one explanation of this, but the pervasive irony of Strachey, the wish to revalue (or 'debunk') the 'great' in the light of modern interpretative psychology, cannot alone account for the popularity of biography. Writers appear to be attracted to B., also perhaps because the central life story of an individual may well serve other interests, such as historical research, literary criticism, social study, and in some instances, no less legitimately, creative and imaginative works of art. B. has therefore gained these interests as ballast against its use for motives of social satire, and the full-length study as against the short and biting pen portrait came into its own again by the third decade of the century. Of the many modern authors of biographical works, it is possible to name only a few. A high reputation in popular esteem was won by Philip Guedalla, particularly for his life of Wellington. Harold Nicolson, Hugh Kingsmill, Hilaire Belloc, Hesketh Pearson, Osbert Burdett, John Fortescue should be mentioned in Eng. literature; Gamaliel Bradford, Van Wyck Brooks, Katherine Anthony, Joseph Krutch, and Matthew Josephson in Amer., and among continental writers with international reputation André Maurois, Stefan Zweig (d. 1942), Emil Ludwig (d. 1948), and Salvador de Madariaga. This brief list does not take into account those many men and women, distinguished in other fields of life and literature who have, among their other works, contributed one or more biographies. A signal example is the monumental life of the duke of Marlborough, *Marlborough, his Life and Times*, written by Winston Churchill, and pub. in 4 vols., 1933-38.

The biographical dictionary dates from the sixteenth century, and first made its appearance at Zürich in Switzerland with the publication of *Bibliotheca Universalis* of Konrad Gesner. It is in effect a catalogue (in Gk., Lat., and Heb.) of past writers with the titles of their works (1545). A second part, *Pandectarium*, was pub. in 1548-49. Other early works of this sort are *Prosopographia* of Verdia de Vauprivas (Lyons, 1573); the Bollandists' *Acta Sanctorum*, 1643-1788; Pierre Bayle's *Dictionnaire historique et critique*, 1696. A dictionary of national B. was pub. in Sweden in 23 vols., 1835-57. Other nations followed; and such dictionaries have appeared in Dutch (1852-1878), Austrian (1856-91), and Ger. (1875-1900). The Brit. *Dictionary of National Biography* was begun in 1882, under the editorship of Leslie Stephen, who was succeeded by Sidney Lee. It was issued in 63 vols., with 2 supplements forming 5 vols. more to bring it down to the end of 1911. Under new auspices and on a

less comprehensive plan, it had a 'Twentieth Century' vol. (1912-21) added in 1927, and since then another vol. has been issued covering the period 1922-1930. *A Dictionary of American Biography*, resembling the D.N.B., was begun in 1928, and completed in 21 vols. in 1937, with a supplementary vol. pub. in 1944. Other biographical dictionaries have been brought out in different countries. Nearly every country has now a *Who's Who*, which gives a brief outline of the life and work of living men who have distinguished themselves in various ways. Many Bs. have been combined with works of criticism. Dr. Johnson was one of the first to use this form in his *Lives of the Poets*. Since then there have been many works of the kind, of which may be mentioned the critical essays of Macaulay, Carlyle, Matthew Arnold, Robert Louis Stevenson, Leslie Stephen, Bagehot, and of many living men of letters. The Eng. Men of Letters series included admirable pieces of critical work by such men as Sir Walter Raleigh, Edmund Gosse, Austin Dobson, etc. There was a similar Amer. series and Fr. men of letters are celebrated in *Les Grands Écrivains français*. One of the earliest publications of a group of Bs. was the famous *Lives of Painters* by Vasari (Florence, 1550). Other examples are Foxe's somewhat untrustworthy *Acts and Monuments of the Church*, or *The Book of Martyrs*, pub. at Basle in 1559, and trans. into Eng. in 1563; Cunningham's *British Painters, Sculptors, and Architects*, 1829-1833; Mrs. Jameson's *Early Italian Painters*, 1845; Bryan's *Dictionary of Painters*, 1879-85; Hamilton's *Poets Laureate of England*, 1888; Bellamy's *Eminent Doctors*; Lord Campbell's *Lives of the Lord Chancellors and Lives of the Chief-Justices*; Doran's *Their Majesties' Servants*, 1864; Grove's *Dictionary of Music and Musicians*, 1878-89; 2nd ed. 1904-7; 3rd 1927; 4th 1938-40 (2nd was ed. by J. Fuller Maitland; 3rd and 4th by H. C. Colles); 5th ed. by Eric Blom, in preparation (1949); Smiles's *Lives of Engineers*; Agnes Strickland's *Lives of the Queens of England, of the Tudor Princesses, and of the Last Four Princesses of the House of Stuart*; H. A. Müller's *Biographisches Künstler-Lexikon der Gegenwart*, 1882. Some are of certain countries only, such as Appleton's *Cyclopedia of American Biography*, 1887-88, and Chambers's *Dictionary of Eminent Scotsmen*, 1835.

For cyclopædic biographical dictionaries, consult: *Biographia Ecclesiastica*, 1704; *Biographia Britannica*, 1747-66; *Biographia Classica*, 1778; Michaud's *Biographie universelle*, 1811-28 (new ed., 45 vols., 1842-65); *The English Cyclopædia*, with biographical section, 1856-57; *Nouvelle Biographie générale*, 1857-66; Chalmers's *Biographical Dictionary*, 1812-1817; Sparks's *Library of American Biography*, 10 vols., 1834-38; Vapereau's *Dictionnaire universel des contemporains*; *Dizionario Biografico* of Gubernatis, 1880; Rose's *New General Biographical Dictionary*, 1829-47; Webster's *Biographical Dictionary* (latest ed. 1943); Cham-

bers's *Biographical Dictionary* (latest ed. 1946).

Biology (Gk. βίος life; λόγος, discourse), the science of life. It treats generally of the life of animals and plants, including their morphology, physiology, origin, development, and distribution. It attempts to survey all the phenomena manifested by living matter.

Two Main Aspects of Biology. The hist. of B. from the beginning discovers 2 main types of investigator at work. The first confines himself to simple observations of living things and to accounts of what he sees. The other attempts to systematise the accounts he receives from observers. The discovery of new forms and new species has by no means come to an end, and the invention of new techniques constantly adds to our knowledge of known forms and species. The hist. of B. is thus the twofold hist. of increasingly extensive and intensive observation going on side by side with increasingly comprehensive generalisation. But, since the work done in the field of observation is basic and fundamental, it follows that no finality can be claimed for biological science until the whole field of living matter has been exhaustively surveyed.

History of the Rise of Biology. Men, however primitive their mode of life, are dependent for their sustenance upon a limited number of plants and animals. Whether hunters and herders, or merely collectors, it is essential to them that they shall distinguish a number of animals from one another, and that they shall not confuse useful with harmful plants. The div. of living beings into the 2 great categories of plants and animals was achieved by primitive peoples; and, further, animals were classified into birds, beasts, and fishes, and plants into trees, shrubs, and herbs. To some extent, then, primitive man had already made the distinctions which at a later stage produce the various groups of naturalists. The empirical folk-knowledge thus accumulated in the course of many hundreds of years through the observation of nature becomes classified even whilst it is being collected, and is to be regarded as the foundation of the early stages of the science. The Babylonians possessed knowledge of higher animal forms and of human anatomy, and had developed theories of the functions of the visceral organs. In Egypt, also, the sacred animals were studied with minute care. The development of the scarab was known, the metamorphoses of the frog and the fly had been observed, and observations of various parasitic worms had been made. The Egyptian custom of embalming the dead led to a knowledge of the structure of the human body. However, in spite of the accumulation of facts in Egypt and Babylonia, it is to Greece that we must turn for the earliest attempts to organise such knowledge in systematic form. Hippocrates (460-377 B.C.) discarded magical theories of disease, and Aristotle (b. 384 B.C.) originated scientific classification. He was acquainted with over 500

forms classified by modern zoologists, all Gk. and mainly marine. He was the founder of comparative anatomy, and his chief interests were anatomical and morphological. His disciple, Theophrastus, paid special attention to the botanical side of biology, doing for botany what Aristotle had done for zoology. The influence of Aristotle and his immediate successors led to the development of the school of medical study in Alexandria under the Ptolemies, where B. was studied, with anatomy and physiology, in relation to medicine. In the first century of the Christian era, the Rom., Pliny, compiled his *Natural History* from a number of sources: a work which made



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him, after Aristotle, the most influential of the biologists of classical antiquity. Galen (b. A.D. 131) stood on the borderland between antiquity and the Middle Ages. He began the study of the component parts of the living organism. He recognised the difference between sensory and motor nerves, he described the heart and blood-vessels in detail, and studied the process of respiration. Throughout the Middle Ages little or no progress was made with the study of B., and Galen's work remained unquestioned until Harvey estab. the fact of the circulation of the blood. In the sixteenth century, however, fresh work was begun. Vesalius (b. 1514 or 1515 at Brussels) became prof. at Padua, and carried out investigations into anatomy by means of dissections of the human body. In theory he followed Aristotle and Galen, but he corrected a great many false beliefs and made many new discoveries. Gesner (b. 1516 at Zürich) wrote the *Historia Animalium*. Aldrovandi (b. 1522 at Bologna) was also a zoologist, but in connection with his

work in Bologna planted a botanical garden. Rondelet (b. 1507 at Montpellier) wrote *De piscibus marinis*, a work which groups together not merely fishes, but also crustaceans, worms, molluscs, echinoderms, and other aquatic animals. Cæsalpinus developed the work of classifying plants which Gesner had begun, making the first system of plants according to their seeds. He further explained the nature of dioecious plants, i.e. those in which the male and female organs are carried on separate plants. Generally speaking, the pioneers of the Renaissance carried on their researches in specialised fields, so that botany, zoology, and anatomy were developed as distinct sub-sciences of B. On these foundations progress was made more rapidly during the seventeenth century. Fabricius ab Aquapendente (1537-1619) discovered valves in the veins, and Harvey (b. 1578 at Folkestone) made the discovery of the mechanism of the circulation of the blood, and the means by which it was supplied with nutritive materials. Harvey's work was a great incentive to further research and discovery. This was particularly the case in the important fields of morphology and physiology, from this time on to be regarded as the 2 sub-sciences composing B. Morphology concerns itself only with the analysis of a living structure into its parts, and takes no notice of 'life,' as such; whilst physiology concerns itself with the functioning of the parts described by morphology or with living structures in action. Harvey further laid the foundations of embryology by his assertion that all animals are produced from an ovum. Gasparo Aselli (1581-1626) discovered, just before Harvey pub. his account of the circulation of the blood, the lacteal vessels, in the course of a vivisection experiment on a fully fed dog. Bartholin (b. 1616 in Copenhagen), following up Aselli's work, discovered the nature of the lymphatic ducts. This discovery was made independently somewhat earlier by Rudbeck (b. 1630 at Västerås), but Bartholin's account was the first to be pub. Robert Hooke (b. 1635) pub. in 1665 his *Micrographia*, containing a description of the cellular structure to be observed in thin slices of cork, thus having the way for the later generalisations on cells by Schleiden and Schwann. Malpighi (b. 1628 at Cavalcuore) was the founder of microscopical anatomy as a branch of botany and of zoology. He discovered the capillaries of animals and stomata in leaves, and applied the new technique to the study of human anatomy. Nehemiah Grew (b. 1628) independently applied the microscope to problems of plant anatomy. Grew and Malpighi freely exchanged ideas, and worked together, their collaboration resulting in the conception that the structure of organised matter is something unique, a view which remained at the stage where these investigators left it until the development of the cell theory. Leeuwenhoek (b. 1632) at Delft applied himself to improving the microscope, and by its aid studied the spermatozoa of

various animals, and discovered the Infusoria and the Rotifera. He is to be credited with the discovery of bacteria, which he observed in scrapings taken from his teeth; his drawings show clearly the 3 main shapes of bacteria. He made many discoveries in the field of animal histology, and showed the difference of structure between the stems of monocotyledons and dicotyledons. He first questioned the view that any living creatures may be spontaneously generated by the putrefaction of organic substances, but insisted that they are produced by reproductive processes. Swammerdam (b. 1637 at Amsterdam), combining fine dissection with microscopical technique, investigated the anatomy of invertebrate animals, and laid the foundations of modern entomology. He explained the development of the frog and of insects on evolutionary principles, and also made observations on the physiology of muscle; he showed that there was no change in volume when a muscle contracted. Another Dutchman, de Graaf (b. 1641), by his study of the sexual organs, overthrew the Aristotelian doctrine that the embryo is the product of the male semen alone, and gave an account of the true character of fertilisation. John Ray (b. 1627, near Braintree; d. 1705) and Francis Willughby (q.v.) (1635-72) applied themselves to the problem of classification; Ray applying himself at first especially to botany, and Willughby to zoology. Ray's important publication was the *Historia plantarum generalis*, in which he summarises all the botanical knowledge of his time, and lays the foundations of an anatomical classification of plants, which prepared the way for the work of Linnaeus in the following century. Hermann Boerhaave (b. 1668, near Leyden) made a close study of the general structure and functions of the human body, and presented the results of his survey in terms which more closely resemble the conclusions of modern B. than the work of his contemporaries. He sought to explain many biological phenomena in terms of chem. and physics. Albrecht von Haller (b. Berne, 1708; d. 1777) laid out a botanical garden at the univ. of Göttingen, and sought to set up a natural system of plant classification in opposition to the system of Linnaeus: in physiology he investigated muscular irritability, extended knowledge of the circulation of the blood, and began the work in comparative anatomy afterwards extended by John Hunter. Charles Bonnet (b. 1720 at Geneva; d. 1793) applied himself mainly to the study of insect B., but, compelled to give this up through failing sight, applied himself to speculative B. His discovery of parthenogenesis, his observations of the metamorphoses of insects, and contemporary studies of regeneration and reproduction by fission, led him to work out in detail theories of development. He originated the catastrophic theory of creation, according to which the earth has undergone a series of developments, each of which has been cut short by a great

natural catastrophe, which has destroyed the forms of life, though leaving intact the germs from which life was to develop when the catastrophe had ended. For the purposes of his speculations Bonnet was compelled to consider together botany, zoology, anatomy, morphology, physiology, and comparative anatomy, thus unifying those sub-sciences which had been developing independently. De Buffon (b. 1707 at Montbard; d. 1788) pub., in 1749, the first part of his *Histoire naturelle*, which engaged him for the rest of his life. He attempted the task of unifying the study of the earth with the study of living forms by regarding the hist. of the earth as related to the development of living creatures. With



COMTE DE BUFFON

him, the geographical distribution of animals and plants on the surface of the earth becomes significant. Linnaeus (1707-78) pub. the *Systema naturae*, in which he expounds his system of classification. This system laid the basis of classification as we know it to-day; and, through it, the biologist has been able to handle the material which has accumulated as the result of the labours of those engaged in observations and descriptive work. But Linnaeus committed himself to the view that species were immutable, and would ever remain so; each having originated as such through a special act of creation. Jussieu and Cuvier, in the early years of the nineteenth century, developed the classificatory system of Linnaeus in botany and zoology respectively by attending to the comparative anatomy of animals and plants, rather than to the external forms of individuals, and so founded a natural system based on anatomical relationships. Meanwhile, the sub-science of palaeontology had been founded by Palissy the potter, who asserted that fossils are the authentic traces of extinct life; and by John Hutton

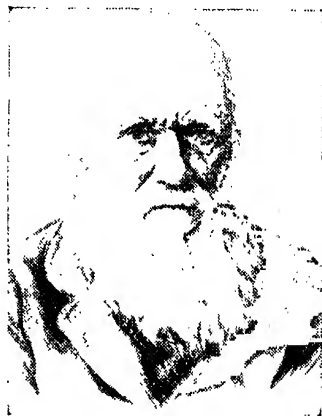
(1726-97), who taught that present processes are adequate to explain the formation of stratified rocks and the existence of fossils. Bichat (b. 1771 at Tholrette (Jura); d. 1802) carried out investigations of tissues by means of the microscope, which entitle him to be regarded as the founder of modern histology. Sprenkel (b. 1750 in Brandenburg; d. 1816) pub. in 1793 a general theory of fertilisation in the vegetable kingdom, which in essentials still holds good. Robert Brown (1773-1858) first discovered the cell-nucleus, and his early work on the flora of Australia was a pioneer piece of plant-geography. Lamarck (b. 1744 in Picardy; d. 1829) challenged the fixity of species, arranging animals in series on the basis of the presence or absence of certain organs. The development of these organs and their presence or absence, he ascribes to habits. He is thus the propounder, not merely of a theory of evolution, but of a theory of the evolutionary process. His views in a modified form were later held by an important school of Neo-Lamarckians. Von Baer (1792-1876) made important contributions in the field of embryology. His discovery of the actual mammalian ovum enabled him to follow the successive stages of embryological development. He showed the affinities of vertebrates through study of comparative embryology, and enunciated the principle that the development of the individual is a recapitulation of the development of the group of which it is a member, an idea which was later elaborated by Ernst Haeckel (1824-1919). Schleiden (b. 1804 at Hamburg; d. 1881) first regarded the plant as a community of separate cells. Schwann (1810-82) took up Schleiden's theory, and showed that it applied to animals, arguing that the whole plant or animal organism is composed of cells and the products of cells. Dujardin (1801-60) first used the term 'sarcode', later supplanted by 'protoplasm', to denote the living material of which simple organisms consist. Hugo von Mohl (b. 1805 at Stuttgart; d. 1872) carried this work farther, and is regarded as the founder of modern plant cytology. Virchow (b. 1821 in Pomerania; d. 1902) applied the results of the cell theory to pathology; and Max Schultze (1825-74), estab. the fact that protoplasm is the fundamental substance of the cell, and that the structures formerly supposed to be essential were products of the living protoplasm. Claude Bernard (b. 1813 at Saint-Julien; d. 1878) was a pioneer in the field of experimental biology. To him is due much of our knowledge of the digestive processes in the alimentary canal. He also showed that sugar, formed as a product of digestion, is temporarily stored in the liver as glycogen. In the second half of the nineteenth century, Charles Darwin (1809-82) and Alfred Russel Wallace (1823-1913) simultaneously propounded the theory that species originate as a consequence of 'natural selection' or the 'survival of the fittest'. This theory was based on the observation that individuals vary in

details from each other; it does not attempt to explain how these variations originate, but shows that, since some are advantageous and some disadvantageous, their possession assists or handicaps animals in their struggle for life. The useful variation tends to preserve the animal, and to be handed on, through heredity, to descendants. The theory demands a knowledge of all the various branches of B., and is an attempt to unify all this knowledge into a single comprehensive science. It therefore represents that aspect of B. which seeks to give a unified account of organic nature. Its apparent reasonableness, as an explanation of biological development, has caused it to be regarded as a general theory of evolution, and it has been adopted in other sciences—in sociology particularly—which are to be regarded as dependent upon B. Francis Galton (1822-1911) developed a theory of eugenics which seeks to elucidate all those agencies which affect racial qualities. In connection with the development of the theory of evolution by means of natural selection, the names of Thomas Henry Huxley (1825-95), Ernst Haeckel (1834-1919), and Herbert Spencer (1820-1903) must be mentioned. Carl Gegenbaur (b. 1826 at Würzburg; d. 1903) worked at the confirmation of Darwin's hypothesis by means of comparative anatomy; showing by means of anatomical comparisons the relationships, due to descent, between the various forms of animals. Like Haeckel, Gegenbaur sought to establish genealogical trees for existing species of animals, and gaps in the line of descent were filled with hypothetical ancestors. The discovery of fresh facts has done away with many of these. Under the influence of Darwinism a great deal of specialised work in the various sub-sciences into which B. is subdivided has since been accomplished in the last fifty years. In anatomy, the names of Wiedersheim (1848-1923) and Arnold Lang (1855-1916) must be mentioned; in embryology, Kowalewsky (1844-1901), Oscar Hertwig (1849), Richard Hertwig (1850), Edwin Ray Lankester (1847-1930), Wilhelm His (1831-1904) and Francis Maitland Balfour (1851-82). In cytology, Strasburger (1844-1912) elucidated the problems of nuclear div. in vegetable cells, whilst Flemming (1843-1905), Fol (1845-92), Bütschli (1848-1920), van Beneden (1845-1910) and Boveri (1862-1915) made many advances in cytological technique, and, in the specialised field of the cytology of nervous structure, the names of Golgi (1844-1926), Ramón y Cajal (1852), Ehrlich (1852-1915), Ranvier (1835-1922), and Nissl (d. 1919) are all connected with important discoveries. The advances in technique made by these workers in the cytological field have made possible the researches which have revealed the details of the process of fertilisation, and thus opened up possibilities of experimentally studying the mechanism of heredity. Meanwhile, though the doctrine of natural selection had been accepted by biologists, and an

increasing mass of evidence had been accumulated, controversies arose regarding a number of issues, such as the question of the origin of variations, and the transmissibility of 'acquired' characters. Weismann (1834-1914) worked out a theory of inheritance based upon cell-structure. His theory of the structure of the germinal cell and its material ('germ plasma') is partly speculative and partly based upon contemporary research, and denies the possibility of any transmission of the effect of habit or practice. Semon (1859-1919) elaborated the 'mneme' theory for the purpose of accounting for the transmission of acquired characters: modifications in the soma of an organism leave impressions ('engrams') on the germ cells in the same sort of way as impressions are formed in the brain by outside stimuli. Hugo de Vries (b. 1848 at Haarlem) was a pioneer in the field of modern genetic research, and discovered 'mutations,' i.e. sudden large variations. Mendel (b. 1822 at Heinzendorf; d. 1884) carried out a series of brilliant experiments on the hybridisation of peas, which remained almost unknown till after his death. The rediscovery of his work was practically the beginning of a period of brilliant investigations of the problems of heredity and the transmission of characters, which is still being carried on and developed. The names of Bateson and Punnett (in England), Baur and Correns (Germany), Czermak (Austria), Lang (Switzerland), Cuénot (France), E. B. Wilson and T. H. Morgan (U.S.A.), are outstanding in this field. Another development in modern B. is that of biochemistry (*q.v.*), arising in the first instance from the modern chem. of solutions and of ferments and the study of the composition of the various products of animal glands, it has been widely developed in many directions. At present a great deal of research is being carried on in connection with the chem. of the secretions of the endocrine glands, whilst the work on the analysis, and subsequent synthesis, of the vitamins has also been of outstanding importance. Cytology, the study of the cell, and particularly its nucleus and chromosomes, is yet another branch of B. which has made tremendous progress in recent years, as a result of work by Strasburger, Darlington, Ruggles Gates, and many others. The chromosomes have been shown to be the carriers of hereditary qualities; many observations on the chromosomal number and behaviour in the cells of an organism have been brought into line with its genetical make-up. Experimental embryology, in the capable hands of Spemann, Vogt, de Beer, and C. H. Waddington, has shown the presence of chemical organisers which are responsible for the differentiation of the parts of the embryo from the segmenting egg, and obscurities in the process of gastrulation in Amphibians have also been cleared up.

Logical Evolution of Biology. This brief survey of the hist. of B. makes it clear that, on the whole, this hist. has followed a logical order of development.

If a perfect logical sequence were possible, we should first seek a complete enumeration of all the forms of life and their natural classification into families, orders, classes, sub-kingdoms, and the 2 great kingdoms of plant and animal life. We should seek to know the distribution of the various plants and animals over the earth at the present time and in the past. Analysis of the separate forms would give rise to anatomy, and comparisons of these analyses to comparative anatomy. The attempt to discover underlying unities leads to the generalisations included under morphology, and the analysis of the organism into organ, tissue, cell, and protoplasm; and the attempt to study



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morphology through observation of the development of the organism from the fertilised ovum leads us to embryology. Meanwhile, the study of the functioning of the organism has given rise to physiology, which must be studied in terms of the organism as a whole, and also in terms of organ, tissue, cell, and protoplasm. This, in turn, will involve studies of the effect of environment, heredity, disease. Variation and reproduction, too, must be studied. In every instance results must be arranged under the categories of organism, organ, tissue, cell, and protoplasm. Final generalisations are only possible as these various studies attain completion, and none has yet reached this stage. When, in the past, it has seemed that finality has been attained, and B. has become dogmatic, the discovery of fresh facts or of a new technique has rendered many of the current generalisations untenable. But any partial generalisation is a gain, provided it subsumes the available facts, since invariably it leads, sooner or later, to fresh investigations and to the further development of one or more of the special

sub-sciences which compose B. The most comprehensive generalisation is the theory of evolution. The great value of Darwin's formulations was that it caused a transition: the attention of workers was transferred from specialised fields of study to the whole of organic nature, and thereby a new impetus was given to special studies themselves. Darwin's views, however, were destined to be modified considerably as a result of the investigations which they initiated. His work gives no explanation of the origin of variations, but points out that variations occur. It likewise gives no account of the mechanism or the laws of heredity, though it assumes that traits are transmitted. Nor does it attempt to explain the problem of the origin of life, though it suggests that the multifarious species of plants and animals have developed from a smaller number of species, and these again in all probability from a still smaller number. Darwin, it is true, made suggestions and speculations regarding some of the problems, but what goes by the name of Darwinism, and is still accepted as such, is the doctrine of the origin of species through the operation of natural selection.

A generalisation so comprehensive as that of Darwin could be made only after many years of work on the part of a large number of investigators. Darwin owed a great deal to the labours of those who had observed and catalogued the facts of plant and animal life, who had surveyed the material available and attempted to arrange it in systematic fashion. Darwin lays under contribution the work of zoologists and botanists, anatomists, embryologists, geologists, and palaeontologists; as well as the experience of practical breeders, and the speculations of Malthus regarding the relation between the increase of pop. and the means of support. One immediate result of Darwin's work, therefore, was the bringing together of a large number of workers in the specialised sub-sciences, through the realisation that these were not separate and independent, but were branches of the science of B.

Nevertheless, Darwinism called imperatively for work in all these various sub-sciences if it was to be firmly established. Exact knowledge had to be gained in regard to (a) the occurrence of variations; (b) the heritability of variations; (c) the role of variations in the struggle for existence. Each of these problems needed to be taken up by specialists.

One of the immediate sources of controversy was the question whether 'acquired' variations could be transmitted, *viz.* variations resulting from habit, accident, disease or education acquired during the lifetime of the individual. Weismann developed, mainly on the basis of embryological and cytological work, his celebrated theory of the germ plasm. According to him, the cells of the developing embryo at a very early stage of development are of 2 kinds—those which are destined to form the bodily tissues of the organism, and those which are destined to form the germ-cells. The body is to be regarded as the guardian

of the germ-cells, organised for the purpose of transmitting the germ plasm from generation to generation. Somatoplasm is not converted into germ plasm, and consequently nothing that happens to the body of the organism has any effect: the results of habits acquired during lifetime, etc., cannot be transmitted. Weismann explained the origin of variations by utilising the newly discovered facts of cell div., though he carried his speculations into fields where confirmation by microscopic research was impossible. He supposed that the chromosomes of the nucleus were composed of minute ultimate elements, each of which corresponded to a unit character of the developed organism. The 'reducing divs.' of the maturing ovum, and the comparable processes during spermatogenesis, were therefore to be regarded as a means of eliminating a number of unit characters and fertilisation as a means of introducing fresh unit characters. In this way, Weismann and his followers maintained, the origin of variations could be explained. Natural selection eliminated those organisms whose variations did not help them in the struggle for existence, and preserved those whose variations were favourable. Nevertheless, some of the further developments of Weismann's theory were tantamount to an admission of the effect of habit on the germ plasm; if an organ was not used, for instance, then its determinants within the germ plasm were weakened, and ultimately perished as a result of the competition for survival which went on within the organism. This is an admission that the germ plasm *may be modified* as a result of a mode of life developed by the individual organism. There are also difficulties in the application of Weismann's theory to plants, where the clear-cut distinction into somatoplasm and germ plasm shown by many animals is entirely absent.

Weismann's theory directed a great deal of attention to the structure of the chromosomes of the nucleus of the germ cells; and many of his speculations regarding the character of this structure were confirmed. The modern theories of heredity conceive the existence of invisible elements termed genes, and justify the assumption by means of numerical and quantitative data. The modern theories differ from those of Weismann in that they do not arbitrarily assign properties to these ultimate elements to suit their views, but endeavour to assert no more about the genes than they are compelled to do by actual evidence. Knowledge of the structure of the chromosomes has been carried far beyond the point at which actual observation is possible, principally through the development of a technique which originated with Gregor Mendel. Mendel's work was carried on largely with peas. By crossing dwarf plants with tall plants, he obtained a large number of hybrids, all tall. By self-fertilising those, he obtained seeds which gave a generation in which there were three times as many tall plants as short ones. He explained his results

by assuming that there was present in the seed an element which determined the character 'shortness' or 'tallness.' Pollen grains and ovules of the pure dwarf parent plants contain only the short element; those of the pure tall plants carry only the tall element. When we cross short and tall together, fertilising 'tall' ovules with 'short' pollen, or vice versa, the offspring are tall, though their cells contain both 'short' and 'tall' elements. However, when the pollen cells and the ovules mature, the maturation processes eliminate one of these elements, so that one-half of the pollen grains carry the 'tall' element and the other half the 'short' element; the same is true of the ovules. Fertilisation brings together the



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elements in the following ways: SS:ST:TS:TT. That is to say, since the combination of short and tall produces tall hybrids, one-fourth of the total number of plants will be short and three-fourths tall. Mendel's work, which was lost sight of for nearly half a century, led at the beginning of the twentieth century, under Bateson and Punnett in Great Britain, to a great deal of research, confirming and extending the original work of Mendel. In America, T. H. Morgan has carried out a series of researches into unit characters and the structural units of the chromosome, using the small parasitic fruit-fly, *Drosophila*. He, in agreement with Bateson and Punnett, has discovered that the genes are not so free as the early work led the Mendelians to believe, but that some of them tend to function as if they were strongly linked together. In this way, these and other workers have been able to furnish explanations of why certain types of inheritance occur, and why others do not. In the hands of Morgan and his school heredity has become an exact science.

Darwin had regarded variation as

progressive. That is to say, variations began as slight deviations from the normal, and tended to increase in magnitude in successive generations. The Dutch botanist, de Vries, claimed, as a result of his observations of the evening primrose (*Oenothera lamarckiana*) that it was possible for a species to give rise to progeny so markedly different from the parent that they must be regarded as constituting a new species; and asserted that the origin of species must be explained by such gross variations, or 'mutations.' De Vries's theory is still considered to be important as suggesting one factor in the mechanism of evolution. He did B. the service of calling attention to the fact of mutation, and insisting upon the necessity of studying carefully the character of variations, and relating their occurrence to the ultimate structures of the germinal cells.

The charge made against natural selection was that it stressed too strongly the influence of external conditions; seeking to explain the phenomena of living matter by reference less to the organism than to the environment. What was overlooked was that for the biologist the function of the environment was to cause a reaction of the organism, which could be understood only by reference to the organism. Neo-Lamarckianism stresses the importance of form, structure, and functional adaptation, and regards the environment as the stimulus through which what is implicit in the organism becomes explicit as activity; action and then habit. In such or similar terms the transmission of acquired characters is explained; and it at once becomes clear why such experiments as those by which Weismann sought to prove the non-transmissibility of such characters (e.g. cutting off the tails of newly born mice over a series of generations without apparently diminishing the length of the tails of their offspring) are regarded as irrelevant. William McDougall, of Duke Univ., carefully trained rats in specially constructed cages, with the object of discovering where there was marked improvement in 'educability' in later generations. Until his death Prof. MacBride was the leader of the Neo-Lamarckian school in Great Britain.

Morphology. As seen in the historical sketch already given, starting with Gesner, we arrive at the seventeenth century with this sub-science in a rudimentary state. Ray and Willughby then attack it scientifically, and with Buffon it reaches the greatest extension of which it was capable whilst it remained natural hist. He traced out all that was known in the old world with accuracy in his great work on natural hist., and then Linnaeus effected a further improvement by means of his artificial system of classification. This prepared the way for the work of Jussieu in botany; his classification depending not upon external form alone, but resting on a basis of comparative anatomy. Cuvier, taking up the same task in zoology, completed the foundations of the natural system of classification.

cation. Bichat proceeded to the analysis of organs into tissues, Schleiden and Schwann resolved the tissues into cells, and Dujardin and von Mohl the cells into protoplasm. At the same time, the study of embryology, the development of the organism from the ovum, was carried on by von Baer along the lines laid down by Harvey, Wolff, and Robert Brown; so that the elaboration of cells into tissues, and tissues into organs, became exactly known. It became possible to trace the development of an individual organism, knowing its structure and the processes associated with each stage of that development, and to link up the hist. of the individual with that of the race. Any attempt to resolve living matter into something less complex than protoplasm removes the study from the realm of B. to that of physics or of chem. Morphology, then, must be studied in terms of organism, organ, tissue, cell, or protoplasm. Morphology and physiology are the 2 great divs. of the science of B., since between them those cover the whole field of the inquiry into the functioning of organisms.

Physiology. Understanding of physiology is so closely linked to the development of other sciences that it is not at all surprising to find that in the ant. world the knowledge of physiology was practically nil. Hippocrates introduced into medicine the conception that the functioning of the organism was the proper subject of the physician's study; and Harvey, by his demonstration of the circulation of the blood, showed that the processes of life are in some instances bound up with the operations of definite organs, thus stimulating research into the physiology of the various organs of the body. From this, Bichat later developed the study of the functioning of tissue; and Virchow, later, went on to the study of the functioning of the cell. Physiology has to deal ultimately with the processes of growth and waste (metabolism) in the protoplasmic cell, the causes of life and death; so that Bernard's work in relation to these processes of the protoplasm was obviously of very great significance. Morphology and physiology have developed along similar lines, and quite early it was apparent that the two are interdependent, and that each is necessary to the proper interpretation of the other.

Embryology and Evolution. But though morphology and physiology, as the study of the form and functioning of living organisms, are the main branches of B., embryology is capable of linking the two in ways which enable us to look at living matter comprehensively. We begin with the cell, and we observe form changing progressively in close relation to progressively changing function. Haeckel's assertion that all living organisms develop from an ovum was considered of little importance till Wolff reasserted it in the eighteenth century, and it was only after von Baer had developed the science of embryology, and Schleiden and Schwann had estab. the cell theory, that its significance was generally realised. Obser-

vation of the parallels between the facts of palaeontology and those of embryology, and the realisation that the hist. of the individual organism more or less closely resembles the chronologically increasing complexity of organisms, led to the attempt to explain and understand embryological development according to the theory which is termed evolution. Embryology is capable of giving us a historical point of view in the fields of morphology and physiology; enabling us to understand both structure and function by means of their development through progressive stages from simple structure and simple function. This historical study is essential as a supplement to purely descriptive studies if we are to comprehend either structure or form as results of an evolutionary process.

Nature and Origin of Life. Until recently, though the mass of mankind believed that life owed its origin to an act of creation by a divine being, men were nevertheless ready to believe that living organisms could be spontaneously generated from dead or inorganic matter. Vinegar, left alone, might generate eels. Flies and lice might develop from dust. Bees, or rather two-winged flies mimicking bees very closely, might be formed inside the carcass of an animal. Men who hesitated to believe in these alleged phenomena might nevertheless believe that micro-organisms might spontaneously be generated in various infusions—infusoria (as their name implies) from infusions of hay, etc. But, though these beliefs are no longer held, and though it is not seriously doubted that existing organisms are the products of previously existing organisms, two questions constantly arise. The first of these is the question of the origin of the first living matter, from which we may assume all living forms to have been derived. The second is the question of the possibility of making living matter from inorganic materials in our laboratories. The latter query has been raised anew of late years, partly as a consequence of the success of biochemists in synthesising complex compounds hitherto known only in association with living organisms, and partly as a consequence of experiments in the growing of living tissues, severed from the living organism, over long periods of time in appropriate inorganic chemical solutions. It may be urged that the consideration of these problems does not properly fall within the prov. of the biologist, but their results, if not their investigation, are strictly relevant to the study of living matter. It has been estab. that living matter always consists of a complex substance or substances composed of carbon, nitrogen, hydrogen, and oxygen, with traces of other elements and about 70 per cent of water; the components of that primary form of living matter known as protoplasm. Further, living matter is always in a state of physico-chemical change, i.e. it is constantly changing its chemical composition and at the same time liberating or storing energy. One type of change is the

elaboration of chemical substances of more complex character with absorption of energy; whilst the complementary type of change involves the breaking down of complex into simpler substances with liberation of energy. The respiration of air or oxygen causes oxidation of complex substances with production of carbon dioxide, water, and other compounds and liberation of energy, with waste of tissues; whilst the utilisation of food results in reconstruction and storage of energy. The one process (katabolism) is waste and decay; the other (anabolism) is repair, renewal, growth, and storage. The two are included in the single term metabolism. The food taken in by most animal organisms consists of the protoplasm of plants and animals; whilst green plants have the power of building up from carbon dioxide, water, and mineral salts a number of substances, and ultimately protoplasm itself. The condition upon which life depends would seem to be the quantitative relation of anabolism to katabolism. If katabolism is in excess of anabolism, the organism is wasting and decaying; if the reverse, the organism is growing. Should the two exactly balance one another, then the organism is stationary. Nothing comparable to this occurs in non-living matter. A crystal will grow if it be suspended in a saturated solution of matter similar to itself in structure, but there are striking differences between the growth of crystals and that of organisms. In the first place, the crystal will grow only at the expense of matter similar to itself, whilst plants grow through the utilisation of materials widely different from themselves, and even animals absorb materials different from that of which they are made up. Again, crystals grow only by accretion at the surface, while the growth of living matter is always a process of inter-susception between existing molecules in the cells. Further, all living matter decays and dies by resolving itself into products of oxidation, and the life processes can take place only under certain restricted conditions of moisture and temp. All living matter reveals, under the microscope, that its various parts differ chemically and physically; and in most living things these different parts are organised into organs and tissues visibly different. Even the simplest forms of life have the power of reacting to stimuli, which is termed *irritability*. Again, in its mode of propagation, living matter stands in sharp contradistinction to non-living matter; for, all living matter is believed to derive from pre-existent living matter (biogenesis), a portion of which is detached and develops the same power of reproduction by means of div. Nothing is known in the realm of non-living matter which resembles these properties of living matter. These facts seem to imply a div. between the two, but it is nevertheless by no means easy to distinguish simple forms of living matter with certainty from non-living matter, a difficulty well illustrated by the virus particles which cause such diseases

as smallpox and measles, and which are still widely believed to lie on the boundary between the living and the non-living. The criterion may be, after all, not chemical composition, but power of adaptation and functioning. Although a great deal of progress has lately been made in the direction of the synthesis of very complex compounds, chemists are still a long way from the synthesis of anything like protoplasm itself. The actual manuf. of protoplasm, were it achieved, would not necessarily mean that the problem had been solved—since some speculations proceed on the assumption that life is an entity, distinct from, though associated with, living matter, whilst others assume that once the organisation of matter assumes particular types of complexity, the matter is living. It has been suggested, for instance, that in the earth's earlier phases, under different temp. conditions, other forms of life existed, associated with chemical substances, perhaps as complex as protoplasm, but composed of different elements and with different physical properties—but nevertheless irritable, capable of adaptation, of reproduction and of metabolism. Such speculations are based on the view that life and living matter are the same thing. On the other hand, all the 'creation' theories have held that life is something put into matter which, animated by this new principle, becomes living. Some modern vitalists hold what is, in essentials, a similar view, regarding life as an irreducible entity—something unique, which cannot be expressed or explained in terms of anything other than itself. It has a vital spark. Bergson's *élan vital*, which can never be imitated. Others—non-vitalists, materialists, etc.—hold that the entities which the chemist and the physicist consider are adequate to explain life, which is not a separate entity. All that can be said with certainty is that up to the present no success has been achieved as a result of attempts to produce living matter in the laboratories, and that we know of no way in which life is produced except as the result of the reproduction of pre-existing living beings.

Belief in spontaneous generation died hard. As early as 1660 Francesco Redi, of Florence, found that the maggots in decaying meat arose, not from the putrefaction, but from eggs laid on the meat by flies; and that if the meat were covered with a thin cloth, no maggots were found. Nevertheless, he believed that gall-flies and intestinal worms were produced spontaneously. Buffon, Needham, and Lamarck believed that minute life-units were scattered through the universe, and that these spontaneously organised themselves into forms of life. Spallanzani showed that by boiling organic substances and enclosing them in airtight vessels it was possible to prevent living creatures from forming in them. But the greatest blow to the theories of biogenesis, renewed by Pouchet (1800-72), was the series of experiments carried out by Louis Pasteur (1822-95). Since that time

Charlton Bastian is the only man of scientific eminence who has seriously questioned biogenesis. Nevertheless, these experiments merely prove that those living organisms which were believed to have been spontaneously generated were reproduced by pre-existing organisms. They do not touch at all upon the question whether it will be possible to make living organisms, perhaps different from any known species, in the laboratory, from inorganic materials. This is a question which time alone can answer.

Lord Kelvin suggested that life was brought to the earth by meteorites. This is not, however, a speculation about the origin of life, since it deals merely



LORD KELVIN

with its transmission within the universe and says nothing at all about its ultimate origin. Essentially, it merely alters a little the form of the question, from 'How did life originate on the earth?' to 'How did life originate in the universe?' Preyer suggested that the law of the conservation of matter and energy extends also to life, and that it is as reasonable to believe that non-living matter has been evolved from living as to believe the contrary. Ray Lankester took the view that living matter was evolved from non-living matter by gradual stages, and that the first protoplasm fed upon their ancestors. This view fits in well with the general theory of evolution. It assumes that at some time in the earth's hist. the conditions of temp., moisture, etc., were such as to allow the formation of highly complex chemical compounds. Some would break down immediately, whilst perhaps others would—owing to their capacity of being able to use other substances—tend to re-form as fast as they were disintegrated. The theory of the survival of the fittest is applied here. Those compounds best fitted to survive, on account

of their metabolism—their capacity for maintaining a balance between growth and waste—would live on and gradually evolve into protoplasm. Schäfer held a similar view, and believed, in 1912, that the synthesis of the substances akin to protoplasm was on the point of becoming possible, and that before long life would be made artificially in the laboratory. The hope has not yet, however, been realised, nor do we seem measurably nearer the artificial creation of life than we were in 1912. Huxley and Spencer were inclined to believe that biogenesis is now the rule, and that, in all probability, the actual conditions under which life was evolved in the past have disappeared, with no likelihood of reappearance. It may be, of course, that the conditions demanded for the development of life from inorganic materials are so complex, involving so many precisely adjusted factors, that the possibility of the situation occurring twice over, either on the earth or elsewhere in the universe, is an incredibly remote one. Nevertheless, the view is widely held that some form of vegetation, even if not of animal life, occurs on the planet Mars, whilst conditions on Venus resemble those on the Earth at the time when life here first originated. At least one other star besides the Sun has recently been shown to possess a solar system, so that on the ground of probability alone it is unlikely that our own planet is the only one where life is in existence. Perhaps, in so unique a situation, life began. In any case, however, the facts are little further advanced now than they were some years back, in spite of real advances in the field of biochemistry, and we can only say that the origin of life remains a mystery—all forms proceeding, as far as we know, from previous forms; and that we have no evidence that any form of life is being evolved from non-living material.

The Cell Theory. Briefly stated, the cell theory asserts that all plants and animals—in fact, all living matter—consist of one or more cells, composed of protoplasm, and organised into a nucleus and surrounding cell-body. Growth is due to the increase in size of the individual cells, or to their multiplication; or both. Reproduction essentially consists in the div. of these cells into two, so that ultimately each living organism is the product of a single cell. Differentiation is the consequence of a div. of labour amongst the constituent cells of an organism. The vital activities of an organism, therefore, may be regarded as the sum total of the activities of the cells composing it. The cell theory is one of the greatest generalisations of B. The doctrine that every organism is the product of a single cell, which multiplies itself by successive divs. thus forming a group of cells from which the organism is gradually formed, is the basis of the whole study of comparative embryology, which only became possible as a science when Schleiden and Schwann formulated the cell theory.

Embryology. The generalisations of B. have been developed in so great measure

with the help of the study of embryology, that some conception of the general conclusions of embryology is essential to the comprehension of B. As has been already said, the cell theory teaches that all organisms, from the simplest to the most complex, begin life as single cells; embryology studying in detail the whole process of development. It has been discovered that, although the process necessarily varies in the different groups of plants and animals, it is nevertheless possible to generalise extensively regarding the process. The simplest organisms never consist of more than one cell, which, after a time, divides into two parts, each containing a share of the cell-substance, the nucleus and the nuclear contents. There has been a great deal of speculation why this should happen. It has been pointed out that, in a single cell, the power of responding to external stimuli and of taking in food are functions of the external surface, whilst the total needs of the organism are to be regarded as a function of the total bulk, *i.e.* of the volume. We may say that, generally speaking, anabolism is dependent upon the extent of surface, and katabolism upon volume; *i.e.* the one varies as the square of the radius and the other as the cube. In other words, in the growing organism there is a race between growth and renewal on the one hand, and decay and destruction on the other. There is thus, for every cell, an optimum bulk beyond which growth is a handicap, and at this point, it is assumed, the cell safeguards itself by dividing into two smaller ones. Although, when such division has once occurred, the original cell no longer exists, its actual material is part of the new cells. In the simple forms of organisms, consisting of single cells, it is possible to say, therefore, that death never occurs; and that the cells, though not everlasting, are nevertheless immortal. In such forms of life there is no distinction between body and organs. All the functions of a living organism are performed by the one body, and though we speak of the unicellular organism as a simple form of life, physiologically it is very complex, since it performs all the varied functions of nutrition, reproduction, response to external stimuli, excretion, etc., itself. From the metabolic position, as has already been seen, the matter is simpler; all the various activities of the living cell may be summed up under the heads of anabolism and katabolism—or growth and waste. The form of reproduction which has been mentioned in connection with these organisms is known as asexual reproduction, or reproduction by simple fission. A slightly higher, though really hardly different method is that shown by some single cells, such as yeast, which bud off tiny portions of themselves which eventually become separate and grow approximately to the size of the parent cell. Another form of reproduction which can be observed with some unicellular animals results from conjugation. Here two apparently similar cells unite into one,

and then divide to give rise to new individuals; we have here the rudiments of the sexual process which reaches its highest development in the reproduction of the flowering plants and the mammals.

A higher stage of life is reached when a number of similar cells unite together to form a body. We thus have an organism made up of a number of cells (multicellular), and here we see differentiation, certain cells assuming one function preponderantly, and some another. Some cells take on the function of digestion and nutrition, some movement and some reproduction. At a still higher stage, groups of cells become organised, for the purpose of carrying out in common a single function, into aggregates—the tissues; and eventually, in higher forms, tissue aggregates occur—the organs. In these higher forms of life the cell has split up into aggregates of cells of specialised structure, carrying out different functions, but nevertheless all have originated in a single cell, and unitedly they may be termed the organism or body. In the course of the development of the organism, differentiation is constantly going on, and 2 main directions may be distinguished. Some of the cells are differentiated into those which are destined to form the bodily tissues and to be concerned with the functions of nutrition, movement, and response; others are differentiated into the germ cells, which will undertake the function of reproduction. It is clear that for the persistence of the race the function of reproduction is of paramount importance, so that the reproductive cells may be regarded as more important than any others. The reproductive cells are of 2 types, known as ova and sperms (sometimes called spermatozooids in plants and spermatozoa in animals). In dioecious plants and animals, the sperms are carried by certain individuals called males, and the ova by others, termed females. Sometimes a single individual—hermaphrodite—carries both sperms and ova, but in such cases there are, frequently, elaborate mechanisms which ensure the impossibility of union occurring between ova and sperms derived from the same organism. Ova and sperms differ in structure and in function. Ova are normally quiescent and stored with nutriment for the nourishment of the embryo in the early stages of development, whilst sperms are smaller and more active, being provided, in many cases, with structures which enable them to swim about and make their way to the ovum. Sperms which do not unite with an ovum die; and so, in all but exceptional cases, do ova which fail to unite with a sperm. For reproduction to occur a sperm must penetrate an ovum. The nuclei of the two fuse, and the cell material of the sperm is absorbed into the cell material of the ovum. The resulting cell is known as a fertilised ovum, which begins to divide, forming first 2, then 4, 8, 16, etc., cells. In suitable conditions the fertilised ovum will give rise to millions of cells by repeated division and sub-division. The

cells produced by the fertilised ovum have, in very many cases, been observed to be differentiated, very early in division, into germ-cells and somatic cells. No other cells, excepting the germ-cells which are embedded in the reproductive organs till they take their part in reproduction, ever unite to produce a new organism. Somatic cells may increase their number by division, and it is possible for missing parts of organs to be renewed; but repair and regeneration must not be confused with reproduction, a function which is reserved entirely for the germ-cells.

It should be remarked, in passing, that exceptionally it appears to be possible to fertilise an ovum without the aid of a sperm. The eggs laid by the virgin queen bee hatch into drones, and the green fly (*Aphis*) produces large numbers of young from unfertilised eggs. These are cases of parthenogenesis (virgin birth). Still more remarkable is the fact that the unfertilised ova of the sea-urchin may be made to commence development merely by immersing them in inorganic chemical solutions; and that the unfertilised ovum of the frog commences to develop when the egg is merely pricked. Recently a similar claim has been made for eggs of the rabbit (i.e. a mammal), which have been caused to develop as far as the adult stage without any process of natural fertilisation. The only recorded cases of parthenogenesis in humans are those concerning the birth of Christ and the religious leaders of other sects. On such grounds it has been urged that the function of the sperm is purely chemical or mechanical, and that it is not indispensable. But this statement is too sweeping. Geneticists have shown beyond doubt that the sperm carries half of the unit characters which will determine the attributes of the offspring. In some cases of parthenogenesis, observers have seen a part of the ovum, which is normally rejected before fertilisation, returning to the ovum and functioning as a sperm. Again, ova which have been stimulated to development by means of physical or chemical stimuli do not develop normally: even the carefully worked-out methods of Loeb (1859-1924) produced larvae which were not quite normal. What becomes clear from all this is the extremely complex character of the apparently simple process of fertilisation, and the great need of a vast amount of specialised work in many fields before we shall be able to gain a final and comprehensive view of its purpose and the means by which this is achieved.

Closely related to the problems of fertilisation is the problem of death. Weismann regarded the mature organism as the mere guardian of germ-cells destined for reproduction, and death as the nemesis of reproductive acts: once the germ-cells had been brought to maturity and released in sufficient quantity to ensure the perpetuity of the race, the body was of no further use. Death, therefore, appeared to him inevitable. But it is clear that the matter cannot be allowed to rest at this point. If the germ-cell is im-

mortal, and the somatic cell is destined to perish, in what ultimate differences of structure or material does this difference lie. Unicellular organisms, as has already been said, are potentially immortal, and this quality is shared by germ-cells. The somatic cells are formed by the germ-cells; by specialisation they lose their power of reproducing new individuals, though they may divide to produce other cells of their own specialised type. Death seems, then, to be involved in differentiation—the germ-cell *may* die as a result of violence or disease or unfavourable conditions, but the body cell *must* die in any event. However, the various problems raised in this connection have not been solved, and in late years attention was again directed to some of them as a result of experiments in rejuvenation of body tissues.

Perhaps the greatest generalisation in the field of embryology is the recapitulation theory. The embryologists of the earlier half of the nineteenth century had observed that there were interesting resemblances between the early embryonic forms of animals markedly different from each other at maturity. For example, the resemblances between the embryos of sharks and birds and dogs were obvious, in spite of the great differences between adult sharks and birds and dogs. Further, there were resemblances between the very young embryonic forms of creatures so widely different as worms, sea-urchins, frogs, and mammals. Development, that is to say, proceeded on parallel lines up to a point at which divergences began to occur. These phenomena were not intelligible until the theory of evolution had been announced. It was clear to early observers that individual evolution occurred in development, but it was not possible for them to interpret their observations generally until the doctrine of the origin of species came to their aid. It was then realised that individual development became intelligible as a recapitulation of the stages through which the race had passed in its evolution from a simple to a complex organism. Von Baer first enunciated this principle, which is generally named after him, though Haeckel later enunciated it in the form: ontogeny (the development of the individual) recapitulates phylogeny (the evolutionary hist. of the species to which that individual belongs). Further research has shown that often a great deal of omission occurs, and that other complications interfere with the accuracy of the detailed reproduction of the past; but nevertheless the general truth of von Baer's law is admitted. It has, however, been criticised recently by de Beer; the stages in development of the individual are held by him to recapitulate similar stages in the *embryo* of the ancestors, not in the adult form of their ancestors. The principle of Baer's law has been widely used in the fields of sociology, anthropology, etc., and, provided the application is not strained too far, it is capable of illuminating a great many problems. In B., it has been used in the effort to construct genealogical trees of existing species of

animals and plants, and demonstrating their historical relationships; in this way embryology and paleontology have been able to give each other mutual assistance. But it must be remembered that the evolutionary hist. of a single species extends over many millions of years, whilst the process of individual development is a matter of days or weeks, of months at most. Consequently, it is impossible that the development of the embryo from the ovum can do more than retrace the main outlines of the development of the hist. of the race; details must necessarily be omitted, and short cuts often taken. There has been speculation why the ovum must develop into the mature adult by means of this often circuitous route, when greater economy would be secured by more direct means. For example, in the developing human embryo, as in the embryos of the shark and the chick, gill-slits appear. In the shark they are the basis of gills, but in the chick and the human being they simply close again. It has been suggested, however, that such structures provide the necessary stimuli for the development of the structures which subsequently replace them; and this view seems to be borne out by recent work dealing with the hormones, chemical substances generated within the organism and passed into the blood-stream to activate other parts of the body. It seems likely that structures arising in the course of development and disappearing before development is complete may function in this particular way, giving rise to substances necessary for the development of other parts. It has been found that the total removal of embryonic structures interferes very definitely with proper development, whilst their transplantation to other parts of the embryo has quite other effects. Work in this particular field of research is still being carried on at present. Julian Huxley, too, has demonstrated that extracts of endocrine glands may have a marked effect in accelerating development, or even in extending it beyond its usual stage in certain cases, such as axolotl. This creature does not normally pass beyond a tadpole stage of development, but with the use of thyroid extract can be made to develop to the adult amphibian stage.

The Darwinian theory first estab. a scientific explanation of the evolution of living organisms. It differed very greatly from all the evolutionary speculations which had been made before Darwin, some in ant. Greece, inasmuch as it was based on a vast collection of facts and, furthermore, indicated very definitely the direction in which other facts were to be sought. Further it regarded evolution as something which was still going on under the influence of conditions operative at the present day. Darwin asserted that the facts of variation, heredity, and the struggle for existence were completely adequate to explain the multiplicity of species inhabiting the earth as well as the extinct forms revealed by the geologist. A good deal of the evidence upon which

Darwin relied was taken from the practical experience of breeders. These, as Darwin pointed out, constantly improved breeds, evolved new strains, and allowed others to perish, by a process of artificial selection. Certain animals were allowed to survive and to breed; others were killed off. The condition of survival was fitness for the breeder's purpose. In nature, the condition of survival and perpetuation was 'fitness to survive,' viz. the power to compete successfully with other living creatures for the means of subsistence. The simplicity of the Darwinian formula proved misleading to a great many people. It was conceived that the Darwinian theory implied that human beings and animals were mere creatures of environment, and that, through modification of the environment, the aims of philanthropists and social reformers might be achieved. Often enough, too narrow a view of environment was taken, so that an over-simplified doctrine was subjected to still further unjustified simplification, environment being considered as nothing more than an aggregate of material surroundings. It is not necessary to deal with the literature which grew up as a result of confusing the 'fittest to survive' with the morally best? It is merely necessary to point out that in the situations which Darwin conceived as determining survival we are dealing with a totality which involves an object which permits a great variety of activity in respect of it, and a living organism which acts in certain ways. What determines the result is the appropriateness of the organ's reaction for producing those results which mean survival. It is not the mere possession of a structure which counts for so much, but the utilisation of that structure—so that we rapidly pass from the consideration of the material environment to those characters of living matter which are studied by the animal psychologist as 'animal behaviour'. Modern psychology, which stands in very close relation to biology, regards 'behaviour' as a double function, involving at the same time the organism which acts and the objects towards which it acts.

The work which has been done since Darwin's time has not materially affected his theory, though it has modified and amplified the terms he employed. The fundamental fact, first pointed out by Malthus (1766-1834), that the pop. increases at a faster rate than the means of subsistence, remains true, in spite of the opening up of new lands, the improvement of agriculture, and the discovery of new supplies of food. The obvious fact pointed out by Darwin, that far more individuals of every species of living organism are born than can survive, cannot be disputed. The importance of environment is as fully recognised as in Darwin's day, though a great deal of investigation is necessary in every instance before it can be said what is the precise significance of a given object to a given organism. We may exemplify here, perhaps, the detailed studies of

Ross, which revealed exactly what it was within a malaria-infested area which constituted a favourable environment for the mosquito, and made it possible to change it by simple methods into an area in which the mosquito could not survive. Heredity has been a subject of detailed and brilliant research since Darwin's day, and the experimental work in the field promises to make it almost an exact science capable of obtaining results which can be predicted beforehand. Variation, too, has been a subject of careful and detailed study.

The experimental studies of heredity and variation belong, in the main, to the twentieth century. Galton (1822-1911) realised that the question of the tendency of parents to transmit their characteristics to their offspring must be investigated, in part, at least, by a statistical method. Mendel, it will be remembered, working earlier and independently, had arrived at the same conclusion. The difficulties of individual investigation of human heredity were largely caused by the fact that there was no precise knowledge of the history of the feature the inheritance of which was being investigated no matter how thoroughly that feature was known in the individual. Galton's contribution to biological knowledge lies not so much in his actual theories of heredity, as in his discovery of a method which Morgan, Blakeslee, and Riddell have since used successfully.

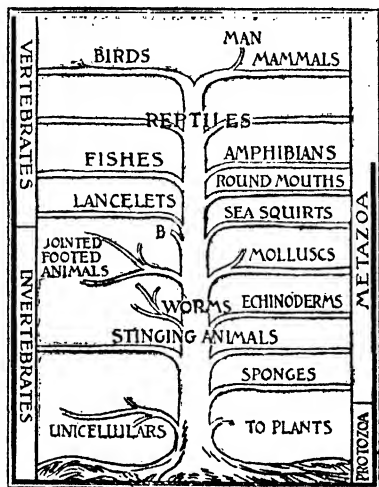
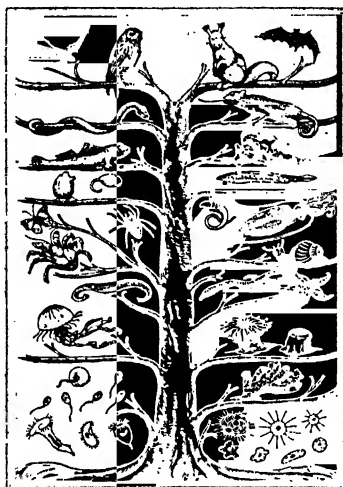
If environment is regarded as the means of making explicit what is implicit in the individual (*e.g.* the capacity to eat is expressed as behaviour only in the presence of an edible object), variations may be looked upon as being partly inherited and partly acquired. Structures which may be used in certain ways are inherited, but modes of using them are acquired. The environment, though it may stimulate certain organisms to act in certain ways, cannot possibly do so in the case of others. Tempting food at the top of a tree may cause a monkey to climb the tree or a bird to fly to it, may stimulate a dog to frantic and futile efforts: it cannot, however, make the dog, whose limbs are unfitted for climbing, climb. The cause of the effort, in all these cases, is a relation between the animal and the food. If the animal were indifferent to the food, the possession of suitable climbing structures would not induce it to climb the tree. Some such line of criticism as this must be applied to the experiments of Weismann and his followers to show that acquired characters were not transmitted, by the mutilation of successive generations of rats and mice. There was no innate tendency towards taillessness in these animals, and Weismann's attempts to stimulate something which did not exist came to nothing. From results of experiments made by Kammerer, Sumner, and other workers, Neo-Lamarckians believe there is no longer any room for doubt that some acquired characters are transmitted, and the question to be solved has thus become that of which characters are so transmitted, in what

ways and to what extent. It has been pointed out that the results of education are not transmitted in human beings, but, on the other hand, men vary in their capacity to be educated, so that we may post a hypothetical variation, 'educability.' It is not possible to define and measure it in men, and, further, the interval between successive generations makes man an unsuitable subject for experiment of this kind. William McDougall, however, conceived the possibility of educating rats, by training them to learn how to interpret signals which lead them to food, failure to follow the proper signals resulting in punishment by means of a mild electric shock. It is possible here to estimate the speed at which the rats learn by counting the number of trials necessary before the rat has learnt how to reach the food without making mistakes. If the same experiment is repeated through a number of generations, evidence will have been accumulated which will indicate whether the results of training are transmitted to later generations in the form of an increased facility to learn. McDougall (1931) pub. an interim report in which he claimed he had evidence that this was the case.

One of the conclusions from the experiments of Mendel and his successors is that no individual possesses characters which have not been transmitted to him, even though in his individual existence he may develop and use them in ways which are different from those in which his parents made use of them. Thus, if we believe that the Alsatian sheepdog, the bulldog, and the spaniel are descended from a single race of dogs, we must believe that the members of that race possessed the characters which we find, in exaggerated form, perhaps, in their descendants. The origin of all the domestic races of plants and animals is accounted for by the view that selective breeding has resulted in the weakening or loss of factors which were present in the ancestors; and the view is confirmed by such experiments as those of Darwin, who succeeded in breeding the wild rock-pigeon by crossing extreme domestic varieties, or the reproduction of the colour of the wild rabbit by the crossing of a yellow rabbit with a Himalayan variety. In such ways we bring together the factors which have been segregated in the domestic strains. It is not possible to say what these factors are, but they seem not to be corpuscles of living matter, as Darwin and Weismann held. They may be definite chemical compounds which, entering the cell, influence metabolism, and so determine development. Of mutations and their origin little is known except that they occur, and to say that they are 'spontaneous' is merely to admit ignorance of their cause. Darwin held that great and sudden changes in environment increases variability. This appears to be true of *Drosophila* when kept under laboratory conditions; the rate of mutation has been greatly increased by subjecting this insect to X-rays, or to radium emanations. Tower, subjecting

beetles, at certain stages of their development, to heat and dryness, found that their offspring differed considerably from their parents, and were constant stocks, since they transmitted these variations to offspring, and on crossing with members of the normal stock gave rise to hybrids in Mendelian ratios. The question is opened up whether the differences in offspring of the same parents are the result of differences in the germ-cells, or of slight environmental differences affecting the developing embryo: the balance of evidence suggests that most differences are due to differences in the germ plasma

caves lose their eyes, parasites lose their locomotive organs. This return from the complex to the simple by the loss of highly specialised structures is known as degeneration. All along the evolutionary path are found organs which were once required, but are now useless or are adapted to some new function, one which they did not in the first instance serve. These organs are called vestigial, and tend to disappear. Degeneration is evidence in support of the evolutionary theory, according to which variation may be either progressive or regressive, a regressive variation being as likely to be



THE CLASSIFICATION OF ANIMALS, EXPRESSED AS A GENEALOGICAL TREE

B, *Balanoglossus* (*Enteropneusta*), an important connecting link between vertebrates and invertebrates.

However, the view that variations arise within the germ-plasm must not blind us to the fact that the germ-plasm is highly resistant to variation, since, but for this, species would eventually cease to exist.

Phylogeny. Phylogeny is the special study of organisms with a view to establishing their relationships. The earlier problem of classification, before Darwinism, was that of reducing a vast accumulation of material to order for convenience of reference and manipulation. But the Darwinian theory of descent implied that there were relationships existing between the various species of living organisms. With the help of morphology, comparative anatomy, embryology, and paleontology, it should be possible to discover lines of descent connecting the various branches of the genealogical tree. Two interesting facts stand out clearly, viz. degeneration and convergence. Forms which differ widely in their adult forms are found to be closely allied in embryonic stages. Fishes, in

a factor favouring survival in some environments as a progressive one. On the other hand, adult organisms show characters which would lead us to group them with others, were it not that the hist. of their embryonic development shows the two to be quite unrelated. In the process of adaptation to environment they have evolved structures comparable to those of unrelated organisms which have been compelled to adapt themselves to similar environmental conditions. The facts of convergence and degeneration make clear the need of the phylogenist for evidence gathered from every available source before he is in a position to say definitely in what relationship an organism stands to other organisms. The cases of the wormlike *Balanoglossus* and the lancelet (*Amphioxus*) (q.v.) may be cited. Only a full knowledge of their development would lead any one to realise that the place of these organisms is not with the worms, and that they have vertebrate affinities.

Place of Biology among the Sciences. It

is evident that B. considers all matters which throw light on the relationship of life to matter. It touches very closely, at its higher stages, the physical and the mental sciences. The study of morphology or physiology in the light of the cell theory leads to consideration of protoplasm, and it is the endeavour of some biologists to reduce this to chemical and physical formulae. Whether this be possible or not, it is clear that living matter responds in a variety of important ways to physical and chemical stimuli, and the relation of B. to chem. and physics has resulted in the development of special branches of investigation under the names of biochemistry and biophysics. Again, the statistical methods of certain branches of biological research depend upon mathematics. Psychology, too, stands in close relation to B.: if the psychologist turns to B. for definitions of environment, organism, instinct, and the like, it is no less true that the biologist uses terms borrowed from the psychologist in his descriptions of animal behaviour. The science of sociology, too, though it is the study of social aggregates, and must study the individual for the purpose of accumulating data, has to make use of concepts borrowed from B. The studies of social and physical anthropology, also, are related to biology.

Applications of Biology. Although B. is pursued purely as a branch of science, as a contemplation of, and an effort to comprehend the world of life and man's place in it, it is proving itself of utilitarian value. From the first it has stood in definite relation to medicine, the earliest botany being connected with the gathering and cultivation of plants of medicinal value. At the present day pharmaceutical research is directed towards the discovery of new remedial agents in plants and methods of extraction. The discovery and preparation of vaccines, anti-toxins, and medicinal preparations from the glands of animals is a definite application of B. to medicine. Again, the study of many diseases showed that they owed their origin to the presence of living organisms which lived either within the body (parasitic worms, filaria, germs of various kinds, etc.) or upon it (various blood-sucking insects, etc.). The development of successful procedures against the disease demanded study by competent biologists of the hist. of the organism causing the disease. Studies of this kind have made it possible to banish certain diseases—malaria, yellow fever, sleeping sickness, relapsing fever—from areas in which they had formerly been prevalent. Various diseases of plants and animals have been investigated with success, and methods devised for combating the causes of the disease. The study of pests which did damage to crops and to forests has indicated means of exterminating them, or of reducing their numbers. Modern surgery owes the development of antiseptic and aseptic methods to discoveries in the field of B. (See articles on BACTERIA; ANTISEPTICS.)

The modern study of genetics has

enabled breeders to produce new strains of animals and plants of great value. New strains of wheat and of grasses have been obtained which are more productive than the strains from which they were produced. So excellent have been the services rendered by B. in such fields as these, that the assistance of competent biologists—botanists, entomologists, and helminthologists—is a recognised part of agric. research, pest control, and related work.

Another field in which modern work in genetics promises much is the field of eugenics. This is an application of the findings of the study of heredity to human beings. At the moment very little has been done, and this not altogether successfully, to prevent the reproduction of human beings with undesirable variations which they are likely to transmit to their offspring—e.g. feeble-mindedness. Already, in highly civilised communities, there are indications that the birth-rate is lowest amongst the best types, and highest amongst the poorest. As a study, eugenics was founded by Galton. A great deal of work remains to be done before it is possible to draw up practicable schemes for utilising the findings of modern B. with the object of improving the race; and much has to be done before the general public can be educated to the view that something should be done. However, though no application of eugenics to life on any collective scale seems imminent, it is worth bearing in mind as an instance of the wide range of the science. See also ANTHROPOLOGY; EVOLUTION; MAN, etc.

Bibliography.—HISTORY AND GENERAL BIOLOGY: R. Vallery-Radot, *Life of Pasteur* (translation), 1902; E. Nordenskiöld, *History of Biology*, 1929; C. Singar, *A Short History of Biology*, 1931; C. Dobell, *Van Leeuwenhoek and his 'Little Animals'*, 1932; J. A. Thomson, *Biology for Everyman*, 1934; H. G. Wells, J. S. Huxley, and G. P. Wells, *The Science of Life*, 1936; A. J. Grove and G. E. Newell, *Animal Biology*, 1942. STRUCTURE AND GENERAL ANATOMY: G. D. H. Carpenter, *The Biology of Insects*, 1928; R. W. Hegner, *Invertebrate Zoology*, 1933; W. H. Atwood, *Introduction to Vertebrate Zoology*, 1940; A. D. Imms, *Outlines of Entomology*, 1942. DEVELOPMENT AND EMBRYOLOGY: J. S. Huxley and G. R. de Beer, *Elements of Experimental Embryology*, 1934; G. R. de Beer, *Embryos and Ancestors*, 1940. PHYSIOLOGY: L. Hoogen, *Comparative Physiology*, 1926; V. B. Wigglesworth, *The Principles of Insect Physiology*, 1939; W. B. Yapp, *Animal Physiology*, 1939. EVOLUTION AND GENETICS: C. Darwin, *On the Origin of Species*, 1859, and *The Descent of Man*, 1871; E. W. Macbride, *Introduction to the Study of Heredity*, 1924; C. L. Morgan, *The Theory of the Gene*, 1926; A. Dendy, *Outlines of Evolutionary Biology* (4th ed.), 1929; T. Dobzhansky, *Genetics and the Origin of Species*, 1937; E. B. Ford, *Mendelism and Evolution*, 1940; J. S. Huxley, *Evolution: a Modern Synthesis*, 1942; Sir A. Keith, *A New Theory of*

Human Evolution, 1948. ECOLOGY: C. Elton, *Animal Ecology*, 1927; H. Eltringham, *The Senses of Insects*, 1933; W. C. Allee, *The Social Life of Animals*, 1938; E. A. Armstrong, *Bird Display: An Introduction to the Study of Bird Psychology*, 1942.

Biology, Marine, see MARINE.

Bion, a Gk. poet, of whose life no record is known to exist. He was b. at Smyrna, or near by, and he lived about 100 B.C., probably in Sicily or Magna Græcia. His poems belong to what is termed the bucolic class. A few only have been preserved and among them the *Lament for Adonis* is the best known. The subjects treated by him were generally the passions of the gods. B.'s poems are usually included with those of Theocritus. Hermann's and Ziegler's separate eds. are the best. A. Lang trans. most of B.'s poems. In 1795 C. F. W. Jacobs pub. his works at Gotha, and in the same year they were pub. in London by Gilbert Wakefield. In 1807 they appeared at Leipzig. According to the legend, B. d. of poison. An elegy was written by his friend Moschus on the event.

Bion, a Gk. scientist, belonged to the family of Democritus. He lived at Abdera, and was famous as a mathematician. It was said that he taught the existence of countries where the year is composed of a day and a night.

Bion of Borysthènes (c. 274-c. 241 B.C.), a Gk. philosopher. He studied at Athens under Crates of the Cynic school, and Theodorus the Atheist. He then began his writings, of which a few fragments merely have descended to us. A typical figure of his age, half philosopher, half *littérateur*—the Greek Voltaire, as he has been called. Epigram, paradox, and antithesis characterise his fragments. He d. at Chalcis in Euboea.

Biondi, Giovanni Francesco (1572-1644), an It. writer, b. in Lesina, one of the Dalmatian Is. Introduced to the court of James I., he won the king's confidence, and a title, by the successful execution of a secret mission to the duke of Savoy. He wrote a *History of the Wars of the Roses* in It., and d. in Berne, leaving a fame based upon the elegance of his prose.

Bionomics, or laws of life, that branch of biological research which deals with the revelations of organisms amongst themselves and to their environment. It thus includes the study of heredity (q.v.), or the tendency of growing organisms to develop a symmetrical arrangement of parts which is characteristic of the species. How this tendency is transmitted is an old and still unsolved problem, though the researches of the followers of Mendel (q.v.) are suggestive. The development of parental characteristics is dependent upon the maintenance of certain conditions in the earliest or pre-natal stages of growth, and these conditions are investigated and generalised in the study of embryology (q.v.). Finally, the species being looked upon as one link in the whole chain of organic life, it is necessary to study how certain structures are affected

by the law of variation (q.v.), which have been directed by the tendencies studied under the name of evolution (q.v.).

Biot, Jean Baptiste (1774-1862), physicist, was b. in Paris. He was educated in the polytechnic school, after which he entered the artillery service. The latter he soon left in order to study natural science and mathematics. He taught physics for some years at Beauvais, after which he became prof. of the same subject in the Collège de France. In 1803 he was elected a member of the Academy of Sciences, and a year later he was appointed to the Observatory of Paris. In 1806 he was made a member of the Bureau des Longitudes, and in 1809 became also prof. of physical astronomy in the univ. of Paris. He pub. sev. excellent textbooks; among them may be mentioned *Essai de géométrie analytique; Traité élémentaire de physique expérimentale*, etc. He also wrote books on the astronomy of the ancients, Egyptians, Chinese, and Indians. Nearly all branches of physics were considerably advanced by his labours. He was one of the most eminent physicists and mathematicians of his time. He d. in Paris.

Biotite, mineral of the mica group. It is a silicate of aluminium and iron with magnesium and potassium. It crystallises into hexagonal prisms. It is often called magnesia mica, as distinct from muscovite or potash mica. The most important variety of B. is merxene, which is found in volcanic deposits. It was from fine crystals of this variety, found near Vesuvius, that mineralogists were able to determine the crystalline form of mica, which was formerly thought to belong to the hexagonal or orthorhombic systems. Other varieties of B. are rubellene, found in many volcanic rocks, voigtite, found in gravel rocks, phlogopite, which has a large proportion of silica, and lepidomelane, which is rich in ferrous and ferric oxides. When ferrous oxide quite replaces magnesia, iron mica results. B. mica is more readily decomposed than muscovite.

Bipinnaria (Lat. *bis*, twice, *penna*, a feather), name given to the larva of a starfish. Its shape is peculiar, and has a tendency to develop long 'arms.' The two ciliated bands, which at first encircle the larva, gradually extend themselves till they enclose nearly the whole of the upper and lower halves of the body.

Biplane, see under AEROPLANE.

Biquadratic (Lat. *biquadratus*, twice squared), an equation which involves the fourth power of the unknown quantity, e.g. $x^4 + ax^3 + bx^2 + cx + d = 0$, where x is unknown.

Bir (Arabic, a well), tn. of Turkey. It is situated on the l. b. of the Euphrates at its nearest approach to the bay of Iskanderun. It is about 80 m. N.E. of Aleppo, on the main route from Syria to Orfa and the Persian frontier. It had formerly a considerable trade with Bagdad by riv. Pop. 10,000.

Birbhum, dist. in Bihar prov., India, with an area of 1752 sq. m. The chief agric. product is rice. Pop. 847,000.

Birch (*Betula*), tree or shrub belonging

to the order Betulaceæ. There are about 25 species of B., and while the majority are trees of medium size, some are shrubs. B. trees are to be found in nearly every country of the N. temperate regions, and in the Arctic. The trunks are round, with slim branches, and the bark is generally in fine, soft, membranous layers. The common B. (*B. alba*) is a graceful tree, silvery white in colour. It grows quickly, but does not live long. It is found in the forests throughout the greater part of Europe, particularly in Russia, and also in Asia Minor and N. America. It is used for charcoal and for firewood. It is manufactured into furniture, used for upholstery, and for carriage building. Thousands of spoons, used in



BIRCH

Russia, are made from it. The bark and also the leaves are utilised medicinally, and for dyeing and tanning; the Russian leather is noticeable for the odour caused by the B. tanning. In N. America the B. tree is as useful. The wood is tough and durable, and is made into canoes, snowshoes, platters, and also used for house roofing. There are sev. kinds of B. in N. America; the white is used in the last-mentioned ways. The black B. (*B. nigra*) and the red B. (*B. lenta*) are other varieties of which the wood is exceptionally hard; hence their value. The leaves may be used for making tea, which has an agreeable flavour. The yellow B. (*B. lutea*) of Nova Scotia, is another species, and the paper B. (*B. papyracea*) is so called because the bark can be thinly peeled into sheets and used in the place of paper. B. oil is manufactured from the outer layers of the bark, and mixed with a fine meal it forms food for pigs. In early spring, when the sap is just beginning to rise, it is drawn from the trunk, and on account of its sugary nature is manufactured into a kind of vinegar. The weeping B. (*B. pendula*) is another species. The dwarf B., a very low shrub, is found almost everywhere in the N. part of the world. The Laplanders used it in stuffing their beds, for fuel, and the seeds for food.

Birch, Charles Bell (1832-93), Eng. sculptor, *b.* in London, the son of Jonathan B. (1783-1847), the translator of *Faust* and the *Nibelungen Lied*. He was a pupil at the school of design, Somerset House, and afterwards he went to Berlin with his father. He then studied at the Berlin Royal Academy. He won £600 in 1864 from the Art Union of London by his life-size group 'A Wood Nymph.' He became an A.R.A. in 1880, and in that year his work of the Griffin, on the Temple Bar memorial in Fleet Street, was accomplished.

Birch, Samuel (1757-1841), Eng. dramatist, *b.* in London. He was the son of a pastrycook in Cornhill. He himself was a pastrycook, the proprietor of 'Birch's,' the oldest shop of the kind in London (Cornhill, c. 1690-1926; Angel Court, from 1927). Lord mayor 1815. He wrote numerous musical dramas and poems, including *The Adopted Child*, *The Smugglers*, *The Manners*, *Fast Asleep*, *A Victim of Romance*, etc. etc.

Birch, Samuel (1813-85), Eng. antiquary and Egyptologist, *b.* in London. He was educated at Merchant Taylors School. In 1861 he was appointed to the keepership of the antiquities department of the Brit. Museum. In 1874 he became president of the London Congress of Orientalists. He trans. many hieroglyphical works, and compiled Egyptian grammars.

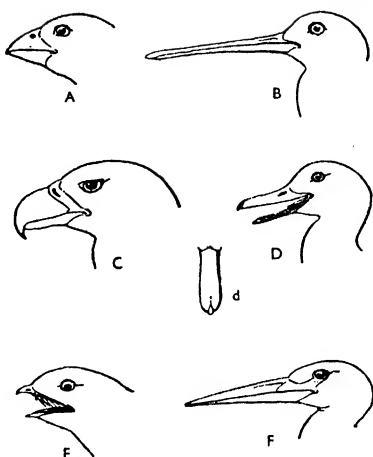
Birch, Thomas (1705-66), Eng. historical writer, *b.* of Quaker parents in London. He qualified himself for the ministry, and entered the Church of England. In 1734 he became chaplain to the earl of Kilmarnock. In 1735 he became a member of the Society of Antiquaries. He did a considerable amount of literary work, compiling and editing. He also transcribed a great number of works in the library at Lambeth Palace.

Birch, Walter de Gray (1842-1924), Eng. archæologist, son of Samuel B. His productions include *The Commentaries of Alfonso d'Albuquerque* and *The Cartularium Saxonum*. For 22 years he ed. the Brit. Archæological Association's *Journal*, and he issued many treatises on subjects dealing with archæology and ant. hist.

Birch-Pfeiffer, Charlotte (1800-68), actress and dramatist of Ger. origin, *b.* at Stuttgart. As soon as she was 13 years of age she began her public life at Munich, and from that time she played at Berlin, Hamburg, and other places. She was married when she was 25 to a Dr. Birch of Copenhagen. She played afterwards in Amsterdam, St. Petersburg, and Pest. Later, she became sole manageress of the Zürich theatre, and took to writing plays. She won more popularity for her play-writing than for her acting, though her works reached no very high standard. She dramatised *Jane Eyre*, and her works were pub. in 24 vols. at Leipzig.

Birchington, seaside resort in the Isle of Thanet, Kent, 2 m. from Margate and 71 m. from London on the S. railway. Dante Gabriel Rossetti *d.* and was buried here. There is a good golf course. Pop. 3000.

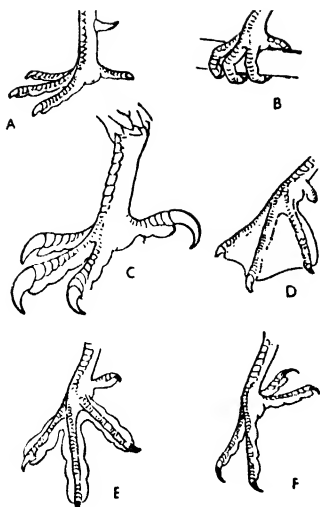
Bird. According to the definition of Dr. Gadow, birds are 'oviparous, warm-blooded, amniotic (see AMNION) Vertebrates, which have their anterior extremities transformed into wings. Metacarpus and fingers carrying feathers or quills. With an intertarsal joint. Not more than 4 toes, of which the first is a hallux.' This transformation of the forelimbs of Bs. into feathered wings is of the greatest importance, and the modification of the internal structure arising from it form the basis of classification of this group of animals known as Aves. The wing consists of the typical parts of a forelimb, the humerus, radius, and ulna, carpus, metacarpus, and digits. The first digit is the *pollex*, or thumb, to which some feathers, known as *ala spuria*, or bastard wing, are attached; the second digit is the *index*, which bears the large feathers known as the *primaries* or *manuals*, usually 10 in number. The primary feathers, with the *secondaries* or *cubitals*, which are attached to the ulna, form the large wing-quills, called *remiges*, which are used in flight. The sternum, or breast-bone, of Bs., is affected by their powers of flight: those Bs. which are able to fly have a carina, or keel, projecting from the sternum, and serving as the basis of attachment of the great pectoral muscles used in flight. When the Bs. are incapable of flight the keel is absent or greatly reduced. The vertebral column is completed in the caudal region by a flat plate known as the *pygostyle*, which forms a support for the rectrices, or steering tail-feathers, and for the uropygial gland (see below). The legs are composed of a femur, tibia, and fibula, and the bones of the foot; the feet have often 4 toes, but in many cases there are only 3. The proximal tarsal bones are fused with the tibia, and the distal tarsals are joined to the metatarsals; between the 2 sets is the intertarsal joint already mentioned in Gadow's definition. In swimming-birds the legs are placed well back, while in those which have an upright carriage the balance of the body is preserved by the forward position of the legs. The feet are known as *pedes radantes*, or wading feet, and *pedes gradarii*, or walking feet, according to their function, and the latter are much more completely feathered than the former. No existing species of Bs. possess teeth. The uropygial bone on the *pygostyle* is an oil-gland used by Bs. in which it is present when preening their feathers, for their skin is unprovided with sebaceous glands. The eyes are furnished not only with an upper and a lower eyelid, but also with a nictitating membrane, semi-transparent, and covering the eye at the volition of the owner. The vascular system contains warm blood, which is kept usually at a higher temperature than that of mammals; death from cold is rare unless allied with torpidity and starvation. The aortic arch is on the right side of a B., whereas in a mammal it is on the left. The respiratory system is curious, as the lungs themselves are small and are prolonged into air-sacs with which are connected a number of air-spaces in



SOME TYPICAL HEADS OF BIRDS

A, Seed-eating bird. B, One which seeks food in soft mud. C, Eagle. D, d. Duck. E, Bird with wide gape which catches insects on wing, e.g. Swallow, Nightjar. F, Heron.

the bones. These air-spaces are found in the species which are powerful flyers and require the lessening of bodily weight, but in young Bs., small Bs., aquatic and terrestrial Bs. they are either absent or negligible; in addition they increase the efficiency of the respiratory system. The organ of voice is not the larynx, but usually the *syrinx*, a peculiarity of this class formed at the bifurcation of the trachea, and the modulations are effected by adjoining muscles. The heart of a B. is enclosed by pericardium, and consists of a right and a left half; there is no diaphragm between the thoracic and abdominal regions. Digestion takes place in the oesophagus, stomach, and intestines, but it is a highly specialised function. The tongue is the first organ to aid in digestion, then comes the oesophagus, and this has frequently a dilatation known as the crop in which the food is softened; the food then passes into the stomach, in the front part of which, the *proventriculus*, the process is carried out further, then follows the gizzard, or *ventriculus*, which contains small stones and gritty matter for the grinding of the food, especially noticeable in such Bs. as feed on seeds and grain. The duties of building a nest and hatching the young cannot be definitely assigned to either the male or the female B. It is customary for the male to provide the material and for his partner to perform the architectural work, but in many cases the female provides her own material. It usually falls to her lot also to do the sitting, but there are cases in which the pair takes this in turn, and other cases in which it is performed



SOME TYPICAL FEET OF BIRDS

A, Bird that passes much of its life on the ground, e.g. Fowl. B, Percher. C, Hawk, Eagle. D, Duck. E, Coot. F, Woodpecker.

by the male alone. The cuckoo neither builds a nest nor rears its own young, but places the eggs in the nest of another bird and leaves the foster-mother to care for them. The position which Aves hold in the animal kingdom is higher than that of Reptilia, and lower than that of Mammalia; with the former class they have great affinity, but few links have been discovered to trace the transition from one to the other. The discovery of the oldest B. known, the fossil *Archæopteryx*, has been of great value in such research, and Huxley has classed Bs., and reptiles together in his group of Sauropsida. There is a resemblance in the generative organs and oviparous condition of both classes, but Bs. are never viviparous. The scales of reptiles may be compared with the feathers of Bs., but the blood of the Reptilia is cold while the blood of Aves is warm. In the development of brain, memory, and sight the lower class compares unfavourably with the higher, but the chief difference between the two lies in the adaptation of the B.'s fore-limbs to flight. This adaptation, as well as a keeled sternum, is to be found in the reptilian *Pterodactyl*, but in the absence of feathers and in the general structure of the skeleton this fossil differs greatly from a B. Among mammals the bat is also able to fly, but the specialised structures by which it accomplishes this feat are entirely different from those found in Aves.

The main reptilian features of *Archæopteryx* are the presence of teeth, the well-marked tail, with many separate vertebrae, and the claws on the wing digits (claws also occur in the embryo ostrich). This bird is found fossilised in sandstone of the Upper Jurassic period at Solenhofen (Bavaria).

In the classification of Bs. zoologists are agreed in dividing them into two unequal orders, the Archæornithes, or primitive Bs., which includes the single genus *Archæopteryx*; and Neornithes or modern Bs., which is sev. times subdivided, at first into 3 sub-orders known as Ratitæ, Odontolæ, and Carinatae. The Ratitæ receive their name from the resemblance of their breastbone to a flat-bottomed boat; they are flightless Bs., with reduced wings, and include, in addition to extinct species, e.g. the moa, living Bs., such as the ostrich, rhea, cassowary, emu, and kiwi, or apteryx. The Odontolæ are extinct marine flightless Bs. with teeth in grooves in the jaws and no keeled breastbone; an example is the genus *Hesperornis*. The Carinatae is much the largest sub-order of Bs., comprising thousands of species. It receives its name from the resemblance of the sternum to a keel, but in sev. flightless forms, as the extinct dodo and the living parrot—genus *Stringops*, this keel is absent or greatly reduced. The sub-divs. of Carinatae are by most zoologists based on the system of Dr. Gadow, and are 14 in number. The first of these, the Ichthyornithes, or fish-and-bird-like tribe, consisted of toothed species of powerful flight which are now extinct. The tribe of Colymbiformes, or swimmers, consists of divers and grebes, all of which are water Bs. with webbed or lobed feet, upright bodies, and short tail-feathers. The Sphenisciformes, or penguins, are flightless marine Bs. covered with feathers, having the wings without large quill-feathers and using them as paddles when in the water; they are confined to the Antarctic. The Procellariiformes, or petrels, are marine Bs. with webbed feet and capable of powerful flight; the albatross and Mother Carey's chicken belong to this group. The Ciconiiformes, or stork-like Bs., have feet adapted for wading, and inhabit marshes as well as the sea, and inland ponds, e.g. the gannet, tropic B., cormorant, heron, bittern, stork, ibis, spoonbill, and flamingo. The Anseriformes, or goose-like Bs., are aquatic and include all geese, swans, ducks, and screamers. The Falconiformes are Bs. of prey with strongly clawed toes and curved beaks, as the hawk, vulture, eagle, kite, buzzard, falcon, and osprey. The Tinamiformes, or tinamous, are a small tribe of earth-Bs., strong and swift in flight. The Galliformes, or fowl-like Bs., run along the ground, e.g. the brush turkey, curassow, peacock, pheasant, domestic fowl, turkey, grouse, partridge, and quail. The Gruiformes, or crane-like Bs., include the water hen, rail, coot, trumpeter, and bustard. Five groups are placed in the Charadriiformes, or plover-like Bs., which vary in habit; some can both fly and

wade, as the plover, oyster-catcher, avocet, curlew, and snipe; some can swim as well as fly, e.g. the gull, tern, auk, and puffin; others, as the sand grouse, inhabit deserts; while others again are land Bs., feeding on grain and seeds, e.g. the pigeon, dove, and dodo. The Cuculiformes, or cuckoo-like Bs., are arboreal, and are represented by the touraco in one group, and by the parrot in the other. Representatives of the arboreal Coraciiformes, or raven-like Bs., are the kingfisher, hoopoe, owl, goatsucker, swift, mouse-bird, quiscal, toucan, humming birds, and

exist in most countries of Europe and in the U.S.A. These are places set apart for wild Bs., and, in England, the best known is that in Hyde Park. There are others in the royal parks and on the N. coast of Norfolk at Blakeney and Cley-by-the-Sea.

Bs. of Various Countries. Countries especially rich in B. life are Australia and New Guinea; Brazil and other parts of S. America, including the Falkland Is.; Mexico; tropical and sub-tropical Africa; and India. Australia's B. life is particularly rich in song Bs., and not a few Australian Bs. have aroused curiosity in the past, if not in the present day. There are wonderful cockatoos, brilliant-plumaged honey-eaters, emus, lyre-Bs., master mocking-Bs., etc. Notable, too, are the mound-builders or mallee hens and scrub turkeys, of which the former are remarkable for the fact that they do not brood on their eggs, but construct natural incubators filled with decomposing vegetation, which generates the heat necessary for hatching. Other Australian Bs. are the wedge-tailed eagle, the fish-hawk of N. Australia (see OSPREY), numerous species of pigeons—bronzewing, wonga, topknot, and crested being among the most beautiful; the blue wren, the masked wood swallow, and the 'summer bird' or black-faced cuckoo. In the Amazon Valley the numerous varieties of Bs. provide many of the most brilliant plumage; but it is a very rare thing in a Brazilian forest to hear Bs. singing, and nature's artistic energies would seem to have been concentrated in the production of beauty for its own sake. In the place of melodious songsters of more temperate climates are harsh-shrieking parrots and toucans; dry chatters such as the jay, and black and yellow hangnest; melancholy wallers, like doves and goat-suckers. There are, however, some little songsters known as 'dancers' which are the size of tom-tits, with blue plumage, red topknots, and black 'points.' The jacutinga, found in enormous numbers in the middle part of the Ivahy Valley, is a species of penelope, in size and appearance something between the turkey and the pheasant. A B. of a different kind is the suruquá, which is the size of a thrush, and, with the exception of some of the humming Bs., by far the loveliest Brazilian forest B. The plumage of the male B. is resplendent purple and gold on the head, throat, and back, the breast a lovely bullfinch red, and the wings dark slate, varied with delicate white bars. Peru is also rich in B. life, notably in guano-producing species, such as the palmipeds, gaviota, and alcatraz, which at times are to be seen flying in myriads like a darkening cloud low down on the waters. Millions of cormorants, too, haunt these silent expanses of coast; scarlet-feathered flamingoes inhabit the upland lakes, and other wild fowl, some of edible value. Of the other S. Amer. countries, Venezuela boasts the scarlet ibis, eagles, and herons; Chile has but few Bs., and nearly all of sombre plumage, such as hawks, a species of turkey-buzzard, and also the condor.



Huddersfield Museum

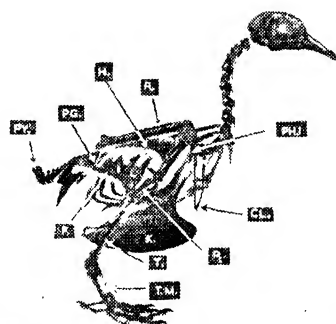
RECONSTRUCTION OF THE ARCHÆOPTERYX

woodpecker. The last, and largest, tribe is that of the Passeriformes, or sparrowlike Bs., all of which are perchers and have few variations of internal structure. To them belong the broadbill, cock of the rock, lyre B., bush-shrike, lark, wagtail, flycatcher, thrush, wren, swallow, butcher-B., tit, B. of paradise, rook, starling, weaver-B., Amer. oriole, crossbill, and finch.

In most countries to-day official protection is given to Bs., but more particularly to Bs. useful in agriculture, such as those that counteract the too rapid spread of injurious insects, slugs, snails, mice, and voles. Again, cruelty to captive or domestic Bs. is an offence punishable by fine or imprisonment, and cruelty to wild Bs. is also punishable. There is a Wild Birds Protection Act which prohibits shooting or snaring certain Bs. during close seasons. Bird sanctuaries

The wild turkey of Mexico was the progenitor of the domestic B. which that country gave to Europe; the zenzotti or mocking-B., the humming B., the zopliote or buzzard—known as the scavenger of the plains and cities—the mournful tecolote or night-owl, and the quetzal, of rare and wonderful plumage, are among the best known of the other Bs. of Mexico. The Falkland Is. are a rare haunt of Bs. Frequent violent gales at migration time add to the numbers of the occasional B. visitors, and these numbers are enhanced during the severe droughts that periodically recur in S. America. Hardly any known Antarctic species is missing in these waters; among the most frequent visitors and indigenous species are the violet-eared dove; red-gartered and other kinds of coot; various kinds of grebe; the crane; the penguin—including the king, gentoo, ringed, or Antarctic, jackdaw, macaroni, and rock-hopper. The ringed penguin is very common in the S. Orkneys, S. Shetlands, and Graham Sound. These and the mollymauks are characteristic features. Also there are innumerable species of petrel—notably Wilson's storm petrel—one of the most numerous species of B. in the whole world, the water here being at times literally black with them. Other Bs. of these waters are the wandering, the black-browed, the yellow-nosed, and the sooty albatross; terns; gull; sandpiper; plover; Chilean flamingo; spoonbill; heron; teal; pintail; vulture; snipe; and geese of various kinds. The S. Atlantic penguin differs slightly from the Antarctic. The 'emperor' of the cold regions is the most beautiful of the whole penguin tribe; the 'adelle' is much smaller and, with the exception of its markings, nearly resembles that of the African coast, being about the same size and height. The African penguin, sometimes called by the natives the laughing jackass, is a very useful B. commercially—a fact which would not be true of the Antarctic varieties. Another notable African B. is the gannet of the Malagasy, or, as the natives name these birds, the Malagases, so called because the Bs. congregate in thousands on these is. It may be observed here that in most Bs. the nostrils are on each side of the beak; but in the gannet there is no nostril on the outside, but immediately under the skin on each side of the head close to the eye there is a system of air-cells, and as the B. breathes inwards the cells on each side of the head are inflated with the air which the B. can exhale at will. There is a much smaller species of gannet, the solan goose, *Sula bassana*, which nests in various places round the coasts of Britain. The African continent, particularly W. Africa, possesses a very varied B. life. There are the great crested grebe; storm petrels and shearwaters; tropic Bs.—not unlike large terns but for their long central tail feathers, 15–26 in. long; red-footed and brown boobies; cormorant; shag or red duiker; darter or snake-B.—somewhat like the Brit. or African white-headed cormorant; frigate-Ba. which

wander from Boa Vista, Cape Verde Is., to the W. African coast; pelicans—white, pink-backed, etc.; heron—W. African reef, black-headed, purple, Goliath; squacco; white-crested bittern, etc.; stork—hammerhead, bishop or African woolly-headed, jabiru, marabou—an immense B. weighing as much as 13 lb., and entirely devoid of any charm in appearance; ibis—spotted-breasted, Upper Guinea olive, Bocage's olive, glossy, and many other kinds; spoonbills and flamingo; geese and duck—one remarkable variety is the pigmy or dwarf



F. Whitman Jones

SKELETON OF A BIRD (PIGEON)

R., radius of wing, with the ulna below and alongside it. H., humerus. PG., pelvic girdle. PY., the pygostyle or ploughshare bone, supporting the tail feathers. F., femur of hind limb. T., tibia. TM., tarso-metatarsus. K., the keel of the sternum, to which are attached the pectoral muscles moving the wings. P., bones (phalanges) of second and third digits of wing. PH.1., bone (phalanx) of first digit, to which is attached the bastard wing; CL., clavicle.

goose, which is to be found in the swamps and is an expert diver; secretary B.—this B. is restricted to Africa, where the two races into which it is divided have a wide but local range. It is protected in Cape Colony and Kenya, for it is becoming rare. There is probably no other large B. so graceful in movement when landing or about to fly, for it resembles a miniature aeroplane most realistically, and curiously enough has never been seen to land otherwise than right into the wind. Also in Africa are found the vulture, falcon, and eagle, kite, buzzard, hawk, harrier, francolin—notably the Cameroon mountain francolin discovered in 1909; partidge and quail—the African blue quail is the smallest member of the Phasianidae, being only 5½ in. long but conspicuously coloured; guinea-fowl; land rail, only 5 in. long; African moorhen and Senegal and Cameroon pinfoot; Sudan bustard or paaaw—the cock scales up to 22 lb. and

has an enormous wing expanse in flight—Nubian bustard, Senegal bustard or knobhaan, and others; jacana or lily-trotter—a B. of reddish-brown body of striking appearance to be found over the whole Ethiopian region; snipe, plover, sandpiper, phalarope, gull, tern, pigeon, and dove; and parrots—notably the grey variety so well known to Europeans, the Congo red-crowned, the Gabun, Niam-Niam, and the scarlet and yellow-bellied varieties. (See David Bannerman, *Birds of Tropical West Africa*.)

India is less noted for Bs. of gorgeous plumage than other tropical countries, but there are many curious kinds, and the parrot tribe is known for its beauty. The varieties of parrots are far more numerous than elsewhere in the world. Eagles, gerfalcons, vultures, and other Bs. of prey abound, but mostly are not comparable for size and plumage with those in some other countries. Hawks were long trained for hunting, two of the most suitable varieties being the lagar and shain, both hawks of the peregrine type. The mina (or myna) of the starling tribe are kept as pets by the natives; kingfishers and herons are caught for their feathers. Other Bs. found in India are the pigeon, quail, plover, widgeon, teal, sheldrake, etc., and various kinds of jungle and water fowl.

The following are the prin. Bs. to be found in Canada: grebe, diver, loon—yellow-bellied, Pacific, etc.; puffin, horn-billed and other guillemot, and various kinds of auk and auklet; gull, kittiwake, tern, shearwater, petrel, pelican, mallard, sheldrake, duck, elder, scoter, Canada goose, bean goose, cackling goose; whistling swan—a rare and accidental visitor; whooping swan; heron, egret, coot, crane, woodcock, snipe, sandpiper—many species, especially the least sandpiper, which breeds on Sable Is.; marked godwit, ptarmigan, hawk, golden eagle—breeds in the Ungava dist.—grey sea, bald, and other eagles; owl, woodpecker, night hawk, lark, cowbird, oriole, and snow bunting—an abundant winter and early spring resident in the E. provs.; sparrow, martin, warbler—numerous varieties—shrike, wren—California, Alaska, Kadiak, and numerous other varieties; thrush, wheatear, bluetthroat.

See T. H. Huxley's *On the Classification of Birds*, 1867; C. Dixon's *Lost and Vanishing Birds*, 1898; F. H. Knowlton and R. Ridgway's *Birds of the World*, 1909; W. Rothschild's *Extinct Birds*, 1913; J. Arthur Thomson's *Biology of Birds*, 1923; A. L. Thomson's *Problems of Bird-Migration*, 1926, and *Birds: An Introduction to Ornithology*, 1927; A. Wetmore's *Migration of Birds*, 1926; E. M. Nicholson's *How Birds Live*, 1927; C. S. Elton's *Animal Ecology*, 1927; E. F. Daglish's *Name This Bird*, 1934, and *Birds of the British Isles*, 1948; A. H. Chisholm's *Bird Wonders of Australia*, 1935; F. B. Kirman's *Bird Behaviour*, 1937; P. A. Taverner's *Birds of Canada*, 1938; H. F. Witherby's *Handbook of British Birds* (5 vols.), 1938–41; J. Fisher's *Birds as Animals*, 1939; A. Roberts's

Birds of South Africa, 1940; S. Gordon's *Wild Birds in Britain*, 1943.

Bird of Paradise, various species of birds of the family Paradisæidæ, which are natives of Australia and the Malay Archipelago. They are closely related to Corvidæ, or crow family, and Sturnidæ, or starlings, but though the females are inconspicuous in appearance, the plumage of the males is gorgeous and varied in colour. They are smallish birds, extremely active, and have compressed beaks, large toes, and strong feet. Their food consists chiefly of fruits, seeds, and the honey taken from flowers, but it may



BIRD OF PARADISE (MALE)

also include insects and small animals, such as worms. The bower-birds (q.v.) of Australia belong to this family, and are noted for their constructive ability. The chief species of the Paradisæidæ are *Paradisæa apoda* of Linnaeus, the great bird of paradise, about 18 in. in length, the males having brilliant plumes of great length springing from beneath their wings; *Cincinurus regius*, king bird of paradise, a native of New Guinea, which has scarlet and green plumage; *Ptilorhis paradisæa*, black rifleman of N. Australia; *Diphyllodes magnifica*, magnificent bird of paradise; *Pteridophora alberti*, common to New Guinea.

Bird, Edward (1772–1819), Eng. genre painter, b. at Wolverhampton, where for some years he was engaged in designing for japanware. In 1809 his 'Good News' was accepted by the Academy, and his reputation became estab. He came under the patronage of Princess Charlotte, and in 1815 he was elected R.A. Well-known paintings of his are 'The Country Auction,' 'Village Politicians,' 'Blacksmith's Shop,' 'The Field of Chevy Chase.'

Bird, Golding (1814–54), Eng. physician, b. in Norfolk; educated privately. His works include *Pathology and Therapeutical Indications*, *The Elements of Natural Philosophy*, etc.

Bird, John (c. 1709-76), Eng. mathematical instrument maker and mechanician of London. He pub. a work entitled *The Method of dividing Astronomical Instruments*.

Bird, Robert Montgomery (1804-54), Amer. author. b. at Newcastle, Delaware, America. He wrote 2 or 3 very successful tragedy plays. *The Gladiator*, *The Broker of Bogota*, and *Oralosa* made him famous. His books, too, were popular; among them were *Calavar*, pub. in 1834, also *A Mexican Romance* in the same year, *The Infidel* in 1835, *Nick of the Woods* in 1837.

Bird, William, see BYRD, WILLIAM.

Birdcage Walk, St. James's Park, connecting Buckingham Gate with Storey's Gate, is named after the aviary estab. there in the reign of James I. The steps known as Cockpit Steps at the Storey's Gate end of the Walk led from Dartmouth Street to the Cockpit. The latter was abolished in 1816, though it had then long ceased to be used for sporting purposes.

Bird-catching Spider, large hairy spider found in many hot countries. It belongs to the genus *Mygale*. When stretched out, it takes up a space from 6 to 9 in. across, although the body is only about 2 in. It lives in trees, or in hollows under rocks, and there it spins its curiously shaped web or nest. It goes out at night to hunt for its food of insects and, as is stated, to ensnare young birds. It has been said that the webs are strong enough to make travelling difficult in the forests.

Bird Cherry (*Prunus padus*), species of cherry tree, a native of the temperate regions of Asia and Europe, being frequently found in Britain. The Scottish name for it is hagberry, which means wood berry. Unlike the wild cherry, the flowers bloom after the leaves have fully appeared in early May. The fruits are black and no bigger than peas. They are bitter in taste, and only fit for birds' food. They are, however, sometimes used for colouring brandy and wine. The wood of the tree is utilised by cabinet-makers.

Bird Lice, or Mallophaga, the name given to a family of insects or parasites which affect birds. These parasites are shaped like lice, but they are not blood-sucking creatures, since their mouths are formed for biting. Their bodies are ringed round the thorax. They feed upon the skin of the birds and eat the feather and sometimes the blood too. It is found that they commonly affect the fowls of the farmyard, and will sometimes be discovered in animals. Where fowls are kept near cats or dogs, the latter are likely to be affected also by these pests, which feed on the hair and fur.

Bird Lime, a sticky substance obtained in various ways. It is got from the bark of the holly tree, and from mistletoe, and boiled with water. It is also prepared from flour; the starch is washed out of the flour, and the gluten left is used for B. L. The substance is frequently utilised for ensnaring birds.

Birdoswald, the site of the Rom. Brit. station of Ambogiana, one of the *Notitia*, 15 m. E. of Carlisle, and a few m. from Greenhead, Cumberland. It is the largest fort in Hadrian's Wall (q.v.). It was originally an earthwork, but no doubt was converted by Severus into a stone fort with ramparts.

Bird's-eye Limestone, limestone found in the Trentin group of N. America. It is named from the white cross-sections that appear in the stone.

Bird's Eye, the name of sev. plants, more particularly the bird's eye primrose (*Primula farinosa*). It has pale lilac flowers, and a yellow eye, and the whole plant is powdered with a substance smelling like musk. It grows in the N. of England, but rarely in Scotland. The name is also given to the *Adonis autumnalis* and, indeed, to the entire genus of *Adonis*, more usually called pheasant's eye.

Bird's-eye View, term used to describe drawings made in a manner of perspective where the eye is supposed to look down from above on to the land illustrated. The difficulty naturally is to show the relative vertical heights accurately so as to give a correct impression.

Bird's Foot (*Ornithopus perpusillus*), wild plant belonging to the order Leguminosæ. Its name is derived from its pod clusters resembling the foot of a bird. It grows in sandy soil, and is sometimes cultivated on the continent as food for sheep. The bird's-foot trefoil, or lady's slipper (*Lotus corniculatus*), also a leguminous herb, is a perennial, valuable in meadow and pasture.

Bird's-foot Trefoil (*Lotus corniculatus*), plant of the order Leguminosæ, which is common in Brit. meadows, and is noted for its beaked carina or keel and nearly straight legume. It affords good pasturage, and received its name from the resemblance of a group of pods to a bird's foot.

Bird's Nest, either the popular or book-name of sev. plants: the wild carrot (*Daucus carota*); the common parsnip (*Pastinaca sativa*); yellow bird's nest (*Monotropa hypopitys*); the fern, *Asplenium (Thamnopteris) nidus*; bird's nest orchis, one of the Orchidaceæ, *Neottia* or *Listera nidus-avis*—a plant with dingy brown flowers growing in spikes and found in N. countries.

Bird's Tongue, name given to sev. plants, but more especially to the common maple (*Acer campestre*); the green fen Ragwort (*Senecio paludosus*); and the scarlet pimpernel (*Anagallis arvensis*).

Birdwood, Sir George (1832-1917), Anglo-Indian civil servant, b. at Belgaum, in the Deccan, eldest son of General Christopher B., commissary of the Bombay Army. Educated for the Indian medical services which he entered in 1854 on the Bombay staff. Later, appointed to the frigate *Ajdaha* for service in the Persian Gulf, during the Indian Mutiny. After the bombardment of Mohammerah, in which this ship took part, B., rendered valuable service in the city of Bombay in

tranquillising the people during a difficult period. In this he owed much to his great personal influence and popularity with the Indian people, between whom and the Indian Gov. he was the intermediary. Subsequently he became sheriff of Bombay, and did much to promote education there. Left India in 1868 for reasons of health and was appointed to supervise Indian exhibits at the Paris Exposition of 1869, and in 1871 was appointed by the India Office in permanent control of Indian exhibits at S. Kensington, which collection he reorganised. Will be remembered as the man who initiated 'Primrose Day' in memory of Lord Beaconsfield. Wrote voluminously on Indian topics.

Birdwood, Field Marshal William Riddell Birdwood, first Baron, Eng. soldier, b. Sept. 13, 1865; educated at Clifton College and the Royal Military College, Sandhurst. He entered the Royal Scots Fusiliers in 1883; transferred to the 12th Royal Lancers, 1885; captain 11th Bengal Lancers, 1896; promoted to colonel 1905, general 1917, field marshal 1925. His earlier campaigns were the Hazara expedition, 1891, Isazal expedition, 1892, and the Tirah expedition, 1897-98. He was at actions at Chagra Kotal and Dargai, the capture of Samagha, and operations in Bazar Valley. In the S. African war, 1899-1902, was brigade-major to Mounted Brigade in Natal, later military secretary to commander-in-chief (Lord Kitchener); and was at the battles of Colenso, Spion Kop, Vaal Krantz, Tugela Heights, Laing's Nek, and the relief of Ladysmith. In the Mohmand expedition, 1908, he was chief of staff; awarded the D.S.O. in that year. In the First World War he was with the Mediterranean Expeditionary Force, first as G.O.C. Australian and New Zealand Army Corps, and then as commander-in-chief of the whole force. Commanded the Dardanelles Army during the evacuation of the Gallipoli Peninsula, 1915-16, and subsequently commanded Australian and New Zealand troops, and, later, the Fifth Army in France. By his fine handling of the Australian and New Zealand forces he gained a great military reputation, and the confidence of his men which conduced in no small measure to their renown on the W. front, besides winning for him the sobriquet of 'Soul of Anzac' (see ANZAC). At the close of the war he received a baronetcy and a grant of £10,000. In 1920 he was appointed G.O.C., N. Army in India, and from 1925 to 1930 he was commander-in-chief of the Indian Army. G.C.M.G. 1919; G.C.B. 1923; G.C.S.I. 1930; G.C.V.O. 1937; raised to the peerage in 1938 as Baron B. of Anzac and Totnes. He is colonel of the 12th Lancers (1920), of the Royal Horse Guards (1933), and of other Indian, Australian, and New Zealand regiments. He became an honorary Fellow of Peterhouse, Cambridge, in 1921, and was master of that college, 1931-33; also president of Clifton College, 1936; captain of Deal Castle, 1935. He is a holder of the Grand Cross of the Legion of Honour,

France, the Croix de Guerre, and numerous other foreign orders.

Biretta, a cap which is worn by Rom. Catholic priests. Its shape is square, with edges standing up. The B. of a bishop is purple, while that of an ordinary priest is black.

Birgus, the generic name of some decapod crustaceans of the family Cenobiridae which are chiefly terrestrial. They are hermit-crabs, dwelling in a hole by day, and coming out at night to seek for food, which consists largely of the fruit of the coco-nut tree. *B. latro*, the robber-crab or purse-crab, is a common species which inhabits the Indo-Pacific region.

Birjand, tn. of Persia, in the Khorassan prov., about 210 m. N.E. from Kerman, and 240 m. S. from Meshed.

Birkbeck, George (1776-1841), Eng. doctor, b. at Settle in Yorkshire. He showed at an early age the attraction which science had for him, and in 1799 he became a doctor. He practised first at Leeds and then in Edinburgh, later accepting the chair of natural philosophy at Glasgow. He later came to London, where he took up the work he had already begun at Glasgow and distinguished himself as a philanthropist. He helped very largely to form the Mechanics' Institute, of which he was the first president. (See B. COLLEGE.) He d. in London.

Birkbeck College, a college of the univ. of London, which provides full courses for various internal degrees for students of both sexes. It was founded by Dr. George Birkbeck, with the assistance of Bentham, Brougham, and Cobbett, as the London Mechanics' Institute in 1823. The original idea of the founders was to instruct mechanics fully in their own trades. In 1884 it moved to its present site, 20 Bream's Buildings, Fetter Lane. The period immediately after 1918 was for B. C. one of great activity and expansion. Lord Haldane of Cloan became president of the college in Mar. 1919, and gave much assistance in advancing the college's interests. In 1920 B. C. became a constituent college of London Univ. The new status involved the abandonment of full-time univ. students, all students being now part-time or evening students. See *A Short History of Birkbeck College*, by C. Delisle Burns, 1924.

Birkdale, part of Southport, England. Pop. 22,000.

Birkebeiner, the name of a political party which existed in Norway in the twelfth and thirteenth centuries; the name arising from the birch-bark footwear which the poverty of the members compelled them to substitute for boots. The party arose in opposition to Erling Skakke and his heir Magnus, and fought for the descendants of Sigurd Mund, i.e. for King Sverre and his heirs, being



BIRETTA

successful in 1218 in having Hakon Hakonsson elected king of Norway.

Birkenfeld, tn. and dist. in Germany. The dist. was once a principality of Oldenburg, but situated at a distance of 300 m. from that place and entirely surrounded by Prussian ter. It had also a system of gov. separate from that of Oldenburg but responsible to it, but is now a *Landkreis* in Rhine prov. It has an area of about 195 sq. m., and is mountainous and well wooded. Its chief products are cattle, flax, hemp, and iron. Pop. (1939) 56,000. The tn. is the cap. of the above-named dist. and has a pop. of 3000. It is situated on the Lahn, an affluent of the Rhine, and is distant from Trier about 25 m. in an E.S.E. direction. It is the centre of the cattle trade. B. was overrun by the Amer. Third Army early in 1945.

Birkenhead, municipal, co., and parl. bor. and seaport of Cheshire, England, situated at the mouth of the R. Mersey. It is 13 m. N.N.W. of Chester, and 194 m. from London by rail. It has an area of 5898 ac., and its pop. by the census of 1931 was 147,803, estimated in 1946 at 120,000. It is a tn. of purely modern growth, owing its increase to the construction of its docks, having a meagre hist. previous to the year 1820, when it was a small hamlet. It is situated on the E. coast of the Wirral peninsula. The railway station is the most northerly of the former G.W.R., connecting the W. of England with the N., and is the terminus for the sea journey to the Isle of Man.

A Benedictine priory of Byrkhed, of which the ruins may still be seen, was founded there in the twelfth century by a Norman baron, and to this priory was granted the monopoly of ferries by Edward II. Previous to about the year 1820 it had a pop. of less than 50, and in 1822 this pop. had not risen to more than 300. In 1843 parl. powers were obtained for the erection of a dock, which was first planned by William Laird, and opened in 1847. Eleven years later, this dock was handed over to the Mersey Docks and Harbour Board, a corporation created especially to control the harbourage of the Mersey. The tn. itself had also during this time grown and improved. In 1836 it received the grant of a market; in 1861 was made a parl. bor. In 1877 it received a municipal charter which included in the tn. the dists. of Transmere, Cloughton, Oxtan, and Higher Rebington, and in 1927 further extensions were granted. It contains at the present time many fine buildings, including a market hall, a tn. hall, a self-equipped municipal hospital and art school, both of which were given to the tn. by Sir John Laird. The main architectural feature is Hamilton Square, one of the finest and largest squares in England. In 1909 a new covered market was opened, and also a large central and 2 smaller branch libraries, which were the gift of Sir Andrew Carnegie. In Dec. 1928 a new art gallery and museum were added to the municipal buildings. There are also technical and theological colleges.

The communications of the tn. with Liverpool are good. An electric railway connects the 2 tns. through the Mersey railway tunnel, opened in 1886, and road transport is carried through the Queenway traffic tunnel, opened in 1934. The tn. is also connected with Liverpool by the corporation fleet of ferry boats, the monopoly of which was bought from the lord of the manor in 1842. B. has a large export trade in coal and manuf. articles. On the dock side are the flour mills which make B. the centre of the milling industry in Europe, and second only in the world to Minneapolis. Its prin. docks are the Egerton, Morpeth, Morpeth Branch, and Wallasey Docks, their total area being about 160 ac., and it has about 94 m. of quays. Huge storage warehouses and abattoirs are erected along the quays, and the ship-building yards of Cammell, Laird & Co. are situated at B. This firm has launched over a thousand ships from the B. yards. The tn. has its town gas, water, and electric lighting undertakings, electric tramways, and motor-bus services. It is a quarter sessions and parl. bor., returning 2 members to the House of Commons. During the war of 1939-45 the tn. suffered severely from enemy air attack from Sept. 1940 to June 1941, and much damage was done to residential dists. Fortunately, the prin. buildings in the tn. were not affected.

Birkenhead, Brit. troopship, wrecked off Point Danger, Simon's Bay, Feb. 26, 1852. The soldiers were mustered on deck and remained steadily in their ranks while the boats took off the women and children; 436 men were drowned. King William I. of Prussia ordered the story to be read out to each of his regiments on parade, as an example of disciplined heroism.

Birkenhead, Frederick Edwin Smith, first Earl of (and of Charlton, Northamptonshire) (1872-1930), Eng. statesman and lawyer, b. at Birkenhead, Cheshire, July 12, eldest son of Frederick Smith, barrister; educated at Birkenhead Grammar School and Wadham College, Oxford. The death of his father in 1887 left him largely to choose his own career. He took a classical scholarship at Wadham, was president of the union, 1893; gained first-class honours, School of Jurisprudence, 1894; was Vinerian Law scholar, 1895; fellow and lecturer of Merton, 1896; lecturer of Oriel, 1897; Univ. Extension lecturer in Modern Hist., 1898; examiner in Final Schools, 1899-1900. He was called to the Bar at Gray's Inn in 1899, went on the N. circuit, and obtained a good practice in Liverpool. But his reputation was merely a local one until 1902, when he appeared at the Old Bailey in defence of one Goudie, charged with frauds on the Bank of Liverpool. This case at once brought recognition in London of his qualities as an advocate and he soon estab. in the cap. a rapidly growing practice. In the 'Tariff Reform' election of 1906 he was elected as Conservative member for the Walton div. of Liverpool, and his maiden

speech in the House on Mar. 12 of that year, which was an unrestrained attack on the Gov. and 'Free Trade,' had the effect of lifting the depression from which the Conservative party was suffering after its crushing defeat at the polls and establishing B. as a brilliant speaker. When Home Rule for Ireland was the foremost issue, B. joined Sir Edward (afterwards Lord) Carson, who was organising armed resistance in N.E. Ulster. In 1911, while still under 40, he had become a privy councillor and a leader of his party, but these added responsibilities did not tempt him to alter his attitude to the cause of Ulster. At the outbreak of the war in 1914 he offered his services to the Gov., and for a short time was head of the Press Bureau. Afterwards he went to France as historian to the Indian Corps, and when the first Coalition Ministry was formed in May 1915 he became solicitor-general, and in the following Nov. attorney-general with a seat in the Cabinet. He was knighted in this year. The latter office he again held in the second Coalition of Dec. 1916, and was created a baronet in Jan. 1918. In Jan. 1919, at the age of 46, he became lord chancellor, and was raised to the peerage as Viscount B. On the Wool-sack his originality and strong personality were felt throughout the Lords, and he showed a generosity and breadth of view which compelled those who had thought of him merely as a combatant lawyer to change their views. The Zinoviev letter and the withdrawal of the Campbell prosecution which contributed largely to the fall of the Labour Gov. in the autumn of 1924 aroused Lord B.'s deepest feelings both as a lawyer and patriot; and in his speeches for his party he subjected the Ministerialists to a merciless criticism which did much to gain the Unionist victory at the polls. In Mr. Baldwin's second Gov. which followed, Lord B. became secretary of state for India. He was fully alive to the scrutiny which his speeches would undergo in India, and he therefore adopted the practice of reading the more important of his parl. pronouncements, his speeches losing thereby much of their attraction. He studied Indian affairs with his usual thoroughness, but was not disposed to keep his knowledge up to date by personal contacts with both Indian and Brit. visitors from the E. which are an important part of the duties of the office. He had other interests, political, personal, and journalistic, and to some extent he began to relax his departmental ties. In May 1925 it was complained in the House of Commons and in *The Times* that he was making his secretaryship of state a mere part-time job. He had been supplementing his official income by means of highly paid journalism, and Mr. Baldwin gave it as his opinion that this ought not to be continued. As secretary of state for India, B. showed steadfast consistency in his condemnation of non-co-operation, and in his recognition that, if that obstacle were overcome, we must further implement the pledges of 1917 and 1919. His

challenge to the politicians to produce a Constitution on which they could agree was the goad to the left-wing collection of 'All Parties' to draft in 1928 what became known as the Nehru Constitution. The failure of authority to prepare the way by prior suggestion and statement for a strictly parl. and, therefore, non-Indian, *personnel* opened the way for the boycott of Sir John Simon's commission by large sections of Indian public life; but the unpopularity of the secretary of state was also a factor in that unfortunate decision. He resigned in Oct. 1928, not, apparently, owing to any disagreement with his Cabinet colleagues, but in order to enter business life. He became chairman of the Greater London and Counties Trust, Ltd., and a director of Imperial Chemical Industries, Ltd., of Tate & Lyle, Ltd., and of Johannesburg Consolidated Investment Co., Ltd. Lord B. was taken ill in Apr. 1930, when he broke a blood-vessel while spending a golfing holiday at Biarritz, but recovered sufficiently to return home. In the following Aug. he developed pneumonia, from which he d. on Sept. 30. His greatest achievement as a lawyer was the Law of Property Act, 1922, which greatly simplified the conveyance of land. He was a most able and upright judge. Pub.: *International Law*, 6th ed., 1927 (Dent); *My American Visit*, 1918; *Points of View*, 1922; *America Revisited*, 1924; *Contemporary Personalities*, 1924; *Famous Trials of History*, 1926; *Fourteen English Judges*, 1926; *Law Life, and Letters*, 1927; *More Famous Trials*, 1928.

Birkenhead, Sir John (1616-79), Eng. writer; secretary to Laud, and a leading spirit during the sojourn of the king and court at Oxford at the time of the Civil war. He originated the *Mercurius Aulicus*, a publication devoted to the Royalist cause, and wrote practically all of it himself. Among other works he wrote *Paul's Churchyard: Libri Theologici, Politici, Historici, and The Assembly Man*.

Birket-el-Keroun, or el Qurun (lake of horns), lake of Middle Egypt, 50 m. S.W. of Cairo. It has an area of over 100 sq. m., and is situated 141 ft. below sea level, having a depth at its deepest parts of about 60 ft.

Birket-el-Mariut, or Mareotis, a lake in the N.W. portion of Lower Egypt, to the S.E. of Alexandria. It was almost dried up when the Eng., in the course of their operations against the Fr. in 1801, cut across the isthmus separating the lake from that of Aboukir. The sea-water flowed in and covered a space of land measuring 30 m. by 15 m. When the Nile water is high the lake covers some 100 sq. m., and it is kept from rising above a certain limit by means of pumps.

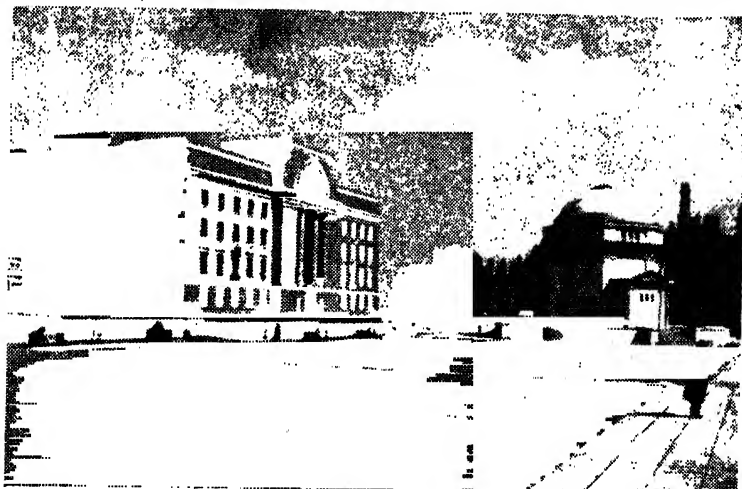
Birkett, Sir Norman, Eng. lawyer and politician, b. at Ulverston, Lancashire, Sept. 6, 1883; educated at Emmanuel College, Cambridge. He was called to the Bar, Inner Temple, in 1913, and took silk in 1924. He had meanwhile turned his attention to politics, having in 1918 unsuccessfully contested the King's Norton div. of Birmingham, and in 1923 he

entered Parliament as Liberal M.P. for the E. div. of Nottingham. He lost his seat in 1924, but was again M.P. from 1929 to 1931. During the Second World War he was chairman of the Advisory Committee for Defence Regulation 18B, and has been a judge of the King's Bench Div. since 1941, in which year he was knighted. In 1945 he was appointed a deputy member of the International War Criminal Court.

Birmingham, city and municipal co. and parl. bor. of England, situated in the N.W. of Warwickshire with suburbs extending into Staffordshire and Worcestershire; 113 m. from London by rail

brass-working industry. Next in importance come industries concerned with jewellery, gold, silver, gilt, and iron. Extensive manufs. are those of pins, buttons, and other dress accessories, nails, screws, steel pens, tools, cycles, motor-cars and accessories, steam and gas engines, and machinery. Other industries are railway-carriage building, glass-making, electro-plating, plastics, and chemicals. In all it is estimated that there are some 1500 dist. trades, and the city consequently possesses a large pop. of skilled artisans.

The city has many fine streets and notable buildings. Mention must be



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THE CIVIC CENTRE, BIRMINGHAM

and 85 m. from Manchester. The municipal area is about 80 sq. m. (over 51,000 ac.), with a pop. of 1,076,230. In 1911 the boundaries were extended to include the bor. of Aston Manor and other dists. In 1927 part of the urb. dist. of Perry Barr was incorporated. The tn. was enfranchised in 1832, and now returns 13 members to Parliament. It became a bor. in 1838, and a city in 1889. The corporation consists of the lord mayor (created in 1936), 34 aldermen, and 102 councillors.

With Wolverhampton, Walsall, Wednesbury, and other tns. of the 'Black Country' dist., B. forms one of the most important of industrial areas. It is the second city of Gt. Britain, and the chief hardware centre of the world, being the largest manufacturing city in England. It is famous for its metal industries, which have been important since the latter half of the seventeenth century. The most outstanding is the

made of the thoroughfares of New Street, Corporation Street, Broad Street, and Colmore Row, and amongst the chief buildings, of the council house and art gallery (1874-81), containing a fine collection of pictures by Burne-Jones, Millais, Hunt, David Cox, and others, in addition to valuable collections of arms, oriental metal-work, and pottery; the town hall, completed in 1834, with a hall capable of seating 2000 people; the Central free library; the Victoria law courts; the exchange and the chamber of commerce; and the Hall of Memory, opened in 1925 as a memorial to the men and women of B., numbering some 13,000, who fell in the First World War. B. is the seat of a bishopric, and the present cathedral was formerly St. Philip's Church, built in the early eighteenth century by Thomas Archer. Until 1715 there was only one par. church, St. Martin's, dedicated in the thirteenth century but wholly rebuilt in 1873-75. Other churches are St. Mary's

(1774) and St. Paul's (1779). A large number of the churchgoers of B. are non-conformist. The Unitarians are an old-established body in B., as also are the Wesleyan Methodists, who were estab. by John Wesley himself, in 1745; and the Baptists, whose original chapel in Cannon Street was built in 1738. The chapel known as the New Meeting, in Moor Street, was notable as having been the scene of Joseph Priestley's ministerial labours from 1780. There is also the Rom. Catholic Cathedral of St. Chad, and the Methodist Central Hall. The city possesses a univ. (see B. UNIV.). The oldest educational establishment is the King Edward VI. Grammar School, founded in 1552. Other educational institutions are the Midland Institute, the Municipal Technical College, the Municipal College of Art, Selly Oak Colleges, and Queen's College. The prin. libraries are the Birmingham Library, founded in 1779 and greatly enlarged in 1798 by Dr. Priestley; the Central Municipal Reference and Lending Libraries and other municipal libraries in different parts of the city. Amongst the many charitable institutions of B. should be noticed the Queen Elizabeth Hospital at Edgbaston, the General Hospital in Steelhouse Lane, the accident hospital, the children's, women's, and homeopathic hospitals, the Blackwell Sanatorium, and the blind institution. The chief open spaces are the Lickey Hills, Warley Woods and Park, Aston Park, Cannon Hill Park, Victoria Park at Small Heath, and Handsworth Park. The gas and water supplies are in the hands of the corporation (the electric supply was nationalised in 1948). The Welsh water-supply scheme, with its chain of reservoirs in the Elan Valley in Radnorshire, supplies B. with water, and the works, which were formally opened by King Edward VII. in 1904, cost approximately £8,000,000. A reservoir is under construction in the Claerwen valley. B., having a central position in the United Kingdom, is an important railway centre, being served by two regions of the Brit. railways. A municipal airport was opened in 1939. Within the city the transport system includes the largest municipal fleet of omnibuses in the country.

Much of B.'s municipal enterprise is due to the efforts of Joseph Chamberlain, who, as mayor of the city in 1873-75, was responsible for many undertakings. B. claims to be the 'best-governed city in the world.' Though essentially a modern tn., B. has a hist. that can be traced back to a period before the Conquest, the place having been a settlement of the Anglo-Saxons. It is mentioned in Domesday Book, and there valued at 20s. After the Conquest it passed into the possession of the Bermingham family. The owner, William de Bermingham, was killed on the side of Simon de Montfort at the battle of Evesham in 1265. By the end of the thirteenth century a fair-sized mkt. tn. had grown up at the focal point of roads at the Bull Ring. In the sixteenth century it was visited by Camden and the antiquary, John Leland. The latter states that there

were many 'smiths in the town that use to make knives and all manner of cuttyngge tools.' It remained in the hands of the family until 1527, when the duke of Northumberland managed to transfer it himself by preferring a false charge against Edward de Bermingham. After the attainder of Northumberland the property passed through various hands. In the Civil war B. evinced strong parliamentary sympathies, for which it paid by being sacked by Prince Rupert in 1643. Subsequent outstanding events were the devastating plague of 1665, the 'church-and-king' riots of 1791, in which the famous Dr. Priestley was an important figure, and the Chartist riots of 1839. Among a number of public monuments are those of Joseph Priestley, Robert Peel, Thomas Attwood (banker and politician), James Watt, and Nelson. In its political hist. B. did much to win for the nation the enfranchisement of the middle classes during the days of the Reform Bill agitation. Amongst the distinguished men closely connected with B., in addition to those already mentioned, have been James Watt, who, with Boulton, perfected the steam engine here; William Murdock, the inventor of gas lighting; William Hutton, the historian; John Baskerville, the printer; Joseph Parkes, and John Bright.

In both the World Wars of 1914-18 and 1939-45 B. became a centre of munition manuf. and received influxes of pop. for that reason. During the air assault on Great Britain in the Second World War, B. was a foremost objective of the enemy. An air raid in Aug. 1940 was the first of nearly 100 attacks, many during the winter of 1940-41. There were serious fire raids during Oct. The heaviest raid took place on the night of Apr. 9-10, 1941, having been preceded by a number of raids, particularly that of Dec. 11-12, 1940, lasting over 13 hrs. The civil defenders of the city were both numerous and determined, and, indeed, their mortality rate was threefold that of the general pop. All the city's medium-sized metal industries had been adapted to war uses and naturally these attracted the Ger. bombers. Particularly heavy damage occurred in the vicinity of New Street and High Street. But the city's well-managed gas, electricity, transport, and water undertakings showed themselves more than a match for the considerable damage the bombs inflicted. At one time four-fifths of the city was without mains water, but only for a very short time. Other more serious raids were on the following dates: Nov. 1, 1940; Nov. 19-20 (350 planes); Nov. 22-23 (200 planes); Dec. 11-12; Apr. 9-10, 1941 (250 planes). The casualty list reached the total of 2241 persons killed and 3010 seriously injured. Some 155,000 buildings were either destroyed or damaged, and nearly all the main buildings of the city received damage in greater or less degree. The market hall, built in 1835, was burnt down in one of the early raids on Aug. 25, 1940. In later raids the council house extension was damaged,

also the art gallery. The B. Empire, one of the oldest music-halls in England, was destroyed in the raid of Apr. 9-10, 1941; as was also the Prince of Wales Theatre. The toll among churches was heavy. Of Church of England buildings 6 were totally demolished, while nearly 100 others sustained damage. The cathedral was largely gutted by fire on Oct. 27, 1940, and the Rom. Catholic cathedral was hit by incendiary bombs on 3 occasions. Other Rom. Catholic buildings were damaged, as also those of the Free Churches.

Birmingham, city in the co. of Jefferson, Alabama, U.S.A., 86 m. N.N.W. of Montgomery. It is the most important seat of the iron industry of the S. states, having numerous factories, mills, and foundries. This has accounted for its rapid growth from a tn. of 3000 inhab. in 1880 to a city of 261,000 inhab.

Birmingham, G. A., see HANNAY, JAMES OWEN.

Birmingham Daily Post, a newspaper estab. in 1857 by John Feeney and Sir John Jaffray, being ed. till 1898 by J. Thackray, who was then succeeded by A. H. Poultney. It was the first penny provincial paper. At its foundation the politics of the paper were Radical, and after the Home Rule split of 1886 it supported the Liberal Unionist party. Later it was associated with Joseph Chamberlain's propaganda, and is now Conservative in its views. Following the death, in 1943, of Sir Charles Hyde, who was at that time proprietor of the paper, the *B. P.*, together with the *Birmingham Mail* and the *Birmingham Weekly Post*, were bought by Lord Iliffe, who was Conservative M.P. for Tamworth, Warwickshire, 1923-29, and formerly part proprietor of the *Daily Telegraph*. The offices of the *B. P.* are in New Street, Birmingham, and Fleet Street, London.

Birmingham University obtained its charter in 1900, largely owing to the endeavours of Joseph Chamberlain, who became its first chancellor. Its predecessor was Mason College, a univ. college, which had superseded Queen's College, founded as a medical school in 1828. The faculties of Arts, Medicine, and Law are still housed in the buildings of the old Mason College in the centre of the city; other buildings have been erected at Bournbrook and Edgbaston. Residence for men is at Chancellor's Hall, Edgbaston, and for women at Univ. House, Edgbaston. An appeal fund, launched in 1930, realised over £600,000 in a few months, and new Students' Union buildings, at a cost of £50,000, were completed in the same year. The univ. has a highly efficient faculty of commerce; it awards a degree in brewing and a diploma for social study, and provides excellent courses in medicine and applied sciences, especially engineering and mining. Women are admitted to all degrees. Its library contains about 150,000 vols. Sir Oliver Lodge was the first prin., and his successor was Sir Charles Grant Robertson, 1920-38 (q.v.).

Birnam, a hill in Perthshire, Scotland,

about 12 m. N.W. of Perth and near the tn. of Dunkeld. It was anciently included in a royal forest, and has been immortalised by the reference to it in Shakespeare's *Macbeth*. Near Dunkeld also there is a small vil. called B.

Birobidjan, an autonomous region of the R.S.F.S.R., in Siberia, situated in a region of the Far E. watered by the Amur. Land was set aside in 1928 for the settlement of Jews on the banks of the riva. Bira and Bidjan. Some 7000 pioneers began the colonisation of an area twice the size of Palestine. Much primeval forest land had to be cleared. All that existed at that time was the 'town' of Birobidjan, merely a small railway station, and a few wooden shacks for railway workers and trappers. But by 1934, when the first five-year plan was completed, B., the tn. after which the whole region is now named, had become a cap. city with four-storeyed stone buildings and paved roads, and all the amenities of a flourishing tn. Mines are now in operation, producing coal, magnesite, and graphite. Near the tns. of Brakan and Kimkan are said to be what may prove to be the biggest deposits of high-grade iron ore yet discovered anywhere in the world. There are gold deposits round Obluchye, the second tn. of the region. There are collective farms and at sev. centres in the area there are tractor stations from which the collectives draw their mechanical equipment. The pop. of the region grew between 1928 and 1933 to 50,000; and by 1939 to 108,000, of whom 75 per cent lived in the cap.

Biron, title of the family of Gontaut, to which a number of distinguished marshals of France belonged.

Armand de Gontaut, Baron de Biron (1524-92), Fr. marshal. He saw service with Brissac in Italy, and although wounded and made permanently lame in early life, he continued an active career as a soldier. He distinguished himself in the Catholic causes at Dreux, St. Denis, and Montcontour, and commanded the royal forces at the siege of La Rochelle, as a reward for which he was made a marshal of France. After 1589 he supported the interests of Henry of Navarre, and was killed at the siege of Epemay in 1592. He was a man of some literary attainment, and some of his letters are in existence at the present day.

Charles de Gontaut, Duc de Biron (1562-1602), son of the above, distinguished himself by his bravery. He was made admiral of France, and in 1594 a marshal of France. He fought for Henry IV., and was employed by him on diplomatic missions, but in 1602, accused of treasonable correspondence with the Spaniards, he was executed in the Bastille. His life was the subject of 2 plays by George Chapman, entitled *The Conspiracy and Tragedy of Charles, Duke of Byron* (1608).

Armand Louis de Gontaut, Duc de Biron (1747-93), a descendant of the above. He fought during the war of Amer. Independence under Lafayette, and on his return was made a marshal. On the outbreak of the revolution he joined the

revolutionaries, and was appointed to a high command. He fought in La Vendée, and he was commander of the army of Flanders. Accused in 1793 by 2 generals, principally, it seems of, leniency, he was executed in Dec. 1793.

Biron, Ernst Johann de, Duke of Courland (1690-1772), Russian nobleman, the son of a landed proprietor in Courland. He won the favour of the niece of Peter the Great, and adopted the style de B. from the Fr. line of dukes. When his mistress, Anna Ivanovna (q.v.), became empress of Russia, he was created duke of Courland, and for some considerable time ruled Russia. He was a thorough autocrat, and could not brook opposition, his period of power being marked by many executions and exiles. On the death of the empress, he assumed the regency, and displayed great power as an administrator. He was, however, exiled to Siberia, from which exile he was called by the Empress Elizabeth in 1741, and on his return he retired into private life. He d. in 1772.

Biostrites, name given by Lamarck to the fossil shell of a mollusc of the order Teleodermacea and family Radiolitida. It occurs in the Middle and Upper Cretaceous.

Birr, see PARSONSTOWN.

Birrell, Augustine (1850-1933), Eng. politician and man of letters, b. near Liverpool, the son of a nonconformist minister. He was educated at Amersham Hall School and Trinity Hall, Cambridge, where he graduated in 1872. He subsequently studied law, became a barrister in 1875, and a bencher of the Inner Temple in 1903. He was Quain prof. of law at Univ. College, London 1896-99. He entered Parliament as Liberal member for W. Fife in 1889, and made a name as a graceful and witty orator, his efforts in this direction giving rise to the expression 'birrelling.' He was defeated in N.E. Manchester at the 1900 election, but re-entered Parliament in 1906 as member for N. Bristol, and minister of education in the Liberal Cabinet. The failure of his Education Bill to pass the House of Lords led to his resignation in 1907, when he was appointed chief secretary for Ireland. In that capacity he introduced (May 1907) the Irish Councils Bill—which failed for want of Nationalist support. In 1911 he prepared the third 'Home Rule' Bill, which Asquith introduced in Apr. 1912. Relying on the assurances of John Redmond as to the state of Ireland, he was taken unawares by the Dublin revolt of Easter 1916. He resigned his office in May; and in 1918 he retired from public life. The first series of his *Obiter Dicta*, 1884, revealed him as an accomplished essayist with a delightful style, and was followed by a *Life of Charlotte Brontë*, 1887; the second series of *Obiter Dicta*, 1887; *Res Judicata*, 1892; *Men, Women, and Books*, 1894; *William Hazlitt*, 1902; *In the Name of the Bodleian*, 1905; and other books on subjects connected with belles lettres and law. Later publications: *Frederick Locker-Lampson* (character sketch), 1920; *More Obiter Dicta*,

1924; *Some Early Recollections of Liverpool*, 1924. He ed. *Home Letters of the Earl of Beaconsfield*, 1928. B. d. at Chelsea, Nov. 20, 1933.

Birs, a small riv. of Switzerland, in the canton of Berne. Near it was fought the battle of St. Jacob's against the Fr. in 1444, when 1600 Swiss were annihilated in opposing 30,000 Fr., the Fr. losing 10,000 men. It was also the scene of a victory of the Swiss over the Austrians in the year 1499, after which the Emperor Maximilian I. recognised the independence of Switzerland.

Birs Nimrud, see BABYLON.

Birstall, manuf. tn. in the W. Riding of Yorkshire, England, 7 m. from Leeds. It has collieries and iron foundries, and manufs. of woollens, worsteds, cotton, and silk. Pop. 7200.

Birth, see CHILD. For statistics of births see REGISTRATION OF BIRTHS, DEATHS, AND MARRIAGES.

Birth Concealment, in Eng. law, a misdemeanour, punishable by a maximum penalty of 2 years' imprisonment with hard labour, for any person, including the mother, to conceal or attempt to conceal the birth of a child by any secret disposition of its body, whether the child d. before, after, or at the time of its birth. Avail is taken of this offence as an alternative charge in cases of persons charged with murder or manslaughter of infants, owing to the frequent difficulty of proving that the child has been, in the legal sense, a living human being. In Scots law, a woman is liable to a maximum penalty of 2 years' imprisonment if she conceals her pregnancy during the whole period, does not call for, nor has assistance at the birth, and subsequently the child is found dead or is missing. Till 1803 such concealment was considered presumptive of murder and punished with death.

Birth Control, term applied to the practice of preventing conception by chemical, mechanical, or other means. In its wider application, the term may be employed to mean any method of restricting or regulating the pop., such as infanticide, abortion, enforced celibacy, or what Malthus named 'moral restraint.' Infanticide and abortion were practised among primitive peoples. B. C. in the sense of the mechanical contrivance of contraception was known to the people of early civilisations, notably the Gks. and Roms., the Hebs., the Arabians, and among Ger. and African tribes. Although such knowledge was available in Europe from the Middle Ages, no effort was made to draw public attention to it until the nineteenth century. The first book on B. C. in Eng. is said to be *Every Woman's Book*; or, *What is Love?* by Richard Carlile, pub. in 1825. Similar publications followed from time to time in both the United Kingdom and the U.S.A.; until wider publicity was given to the subject by the trial of Charles Bradlaugh and Mrs. Besant in 1877 for the offence of selling a pamphlet inculcating what were then known as 'Neo-Malthusian' practices. The foundation of the Malthusian League followed the same

year, Bradlaugh being president and Mrs. Besant secretary. The movement rapidly became world-wide. A parallel legal stimulus was given to the movement in the U.S.A. by the trial of Mrs. Margaret Sanger, in 1914, as the author of the pamphlet *Family Limitation*. From these events the National Birth Control League was formed, and 10 years later the first B. C. clinic was opened in New York. In Great Britain during the corresponding period the person most associated in the public mind with the dissemination of B. C. information was an Eng. woman scientist, Dr. Marie Stopes. A B. C. clinic was opened in London in 1921 largely as a result of her efforts, and clinics were subsequently opened in most cities and tns. in the United Kingdom. Both Mrs. Sanger and Dr. Stopes gained world-wide reputations as serious propagandists in the campaign for making B. C. information generally accessible, and the movement was further stimulated by the effects of the war of 1914-18, which brought this, among other social subjects, into the open as matters of general interest and discussion. The movement has encountered some official opposition, amounting in some countries, as in Italy in 1925 and in Japan, to legal prohibition. In the United Kingdom and the U.S.A. no legal impediment was placed in the way of the movement, except by very strict interpretation of the laws relating to obscenity, and from time to time these have been invoked. The movement aroused irreconcilable opinions. The subject touches biology, medicine, psychology, economics, ethics, and religion; and as vital statistics concern the community as well as the individual, B. C. is becoming a question with which politicians may have to deal. The Rom. Catholic Church is foremost among Christian denominations in denouncing as sinful the practice of all artificial contraceptive methods. A medical committee of the National Birth-rate Commission (not an official body), set up in 1924, was of opinion, *inter alia*, that no entirely successful contraceptive method has yet been found, and that no impediment should be put in the way of married persons obtaining knowledge of contraceptive methods. See Dr. Stopes's treatise, in favour, *Contraception: its Theory, History and Practice* (1933, 1937); Dr. Halliday Sutherland's *Birth Control* (1922) for a Catholic doctor's views against; A. M. Carr-Saunders's *The Population Problem* (1936), for the wider social and economic aspects; J. G. H. Holt's *Marriage and Periodic Abstinence* (1937); and the Amer. Birth Control League's *One Hundred Years of Birth Control*.

Birth, Registration of, see REGISTRATION OF BIRTHS, DEATHS, AND MARRIAGES.

Birth Palsy, Infantile Diplegia, or **Little's Disease**, a paralytic affection caused by injury at birth, through protracted labour, the use of instruments, or other causes. The condition is often not observed during the early years of childhood, but manifests itself when the child

might ordinarily be expected to support itself on its own limbs.

Birtley, mining dist. of Durham, England, 5 m. from Gateshead. Pop. 11,500.

Bisaccia, tn. of Italy, anciently called *Ranula*. It is about 60 m. from Naples, is a bishop's see, and has a pop. of 8000.

Bisacquino, tn. of Sicily situated 27 m. S. of Palermo. It has a pop. of 8000, and trades in oil and grain.

Bisalnagar, tn. in the state of Baroda, India. It is a fairly important manufacturing tn. with a pop. of about 20,000. It manufs. cotton cloths.

Bisalpur, tn. of India, situated in the United Provs., about 25 m. S.E. from Bareilly.

Bisbee, tn. of Arizona, U.S.A., in Cochise co., about 45 m. S.E. from Tombstone. It is the centre of a lead, silver, gold, and copper mining region. Pop. 5800.

Biscay, Bay of (Fr. *Golfe de Gascogne*, Sp. *Golfo de Vizcaya*), an inlet of the Atlantic Ocean; it sweeps in practically a straight line along the N. coast of Spain to the foot of the Pyrenees. On the W. and N. it is bounded by the coast of France, its most northerly point being the ls. of Ushant, and its most southerly point Cape Ortegal. By the Romans the bay was called the *Sinus Aquitanicus*, or the *Sinus Cantabricus*. It forms a fairly regular curve, but has some inlets on the W. coast of France, the chief being the estuaries of the Loire and the Garonne. Its width is roughly about 400 m., and its length is approximately the same. Its S. shore, i.e. the N. coast of Spain, is bold and rocky, and differs very essentially from that of the Fr. coast, which is in most places low and sandy. The bay is noted for the diversity of its currents and for the storms so frequently encountered there; its danger is increased by the prevalence of westerly gales which make navigation very precarious. Its Eng. name is a corruption of the Sp. *Vizcaya*.

Bisceglie, seaport tn. and episcopal see of Italy on the Adriatic. Its pop. is 33,000. It has many fine buildings, including a cathedral, many churches, and a hospital. The port does only a small trade, but stands in a good wine-producing dist.

Bischof, Karl Gustav (1792-1870), Ger. chemist and geologist, b. at Wirl, near Nuremberg. His most important work was a *Manual of Chemical and Physical Geology*.

Bischoff, Mount, tn. in Tasmania, situated 60 m. from Launceston. It is a mining dist., being specially noted for the rich yield of tin ore, which was discovered in 1872. In the short space of 2 years (1884-86) there was an output of more than 2000 tons.

Bischofswerda, tn. in Saxony, 20 m. E. of Dresden, in the political div. of Bautzen. The tn. has cloth factories, glass-works, and potteries, and, in the vicinity, are granite quarries. It was the scene of a battle between the Fr. and the Allies in May 1813. Pop. 9000.

Bischwiller, tn. in the dept. of Bas-Rhin, France, situated on the R. Moder.

It was formerly an episcopal tn., and had a castle, which was dismantled in 1706. A celebrated fair was also held here. It has manufs. of cartridges, carpets, and jute-cloth; hop-growing is also carried on. Pop. 8000.

Biscuit: (1) (Fr., twice-cooked). A kind of hard, dry bread which has not risen, so made in order to be preserved without deterioration for a long time.



A YOUNG BISHAR

E.N.A

Common sea Bs., or ship bread, are totally unfermented, whilst captain's Bs. are partly fermented. All the other forms of B. are fermented. Various machines have been invented for B.-making, and in a modern factory the Bs. are never touched by hand. The various ingredients for hard Bs. are kneaded into a stiff dough by a machine, 'braked' or rolled out between rollers, then cut up into squares by a machine which has a pair of rollers to compress it to the required thickness. The dough is then carried along on a web which takes it under a block, whose cutters cut into the shape required. The cut Bs. then travel slowly through an oven for about a quarter of an hr., on a wire frame; they are then finished and are packed in tins. There are innumerable varieties of Bs., and B.-making is a rapidly increasing industry.

(2) The name given to stone-ware, earthenware, porcelain, etc., when they have undergone the first firing, and before they are finished. When in a B. state the articles are porous, and ready to take any glaze or other decoration. In the case of ordinary drain-pipes and sanitary ware the articles are glazed without being removed from the kiln or oven; common salt is thrown on the fires when the highest temp. is reached, and a glaze is thus formed. When a design is desired to be put on, the design is printed on

transfer paper and applied to the biscuit-ware whilst wet. In the case of porcelain, the decoration is not put on till after the articles have been completely baked. See under POTTERY.

Bish, see BIKH.

Bisharin, the name of a people of E. Africa, to whose stock belong tribes dwelling between the Blue Nile and the Abyssinian highlands. They belong to the Mohammedan religion. See further under BEJA.

Bishop (Gk. *ἐπίσκοπος*, A.-S. *biscop*), an overseer or overlooker. A term that in the early apostolic Church was closely allied with the word elder. The word is used in the N.T. on sev. occasions, as synonymous with the word elder. There is no clear difference made between these two ranks in the Church, such, for example, as is made between bishops and deacons. The duties of Bs., as traced in the N.T., are general superintendence of the churches, pastoral duties which are specially emphasised, and teaching. Within the Catholic Church the B. was recognised as the highest order of the hierarchy of the church, with certain special spiritual functions and with certain rights of oversight over the lower orders of the clergy. By the end of the second century A.D. the claims of the Bs. were estab. much on the lines of the present day, and the theory of the apostolic succession was put forward. By the same time the limitation of the authority of the B. to the diocese had also been put forward and was generally accepted. In the early Church this was probably necessary, since the frequent attacks upon the Christian religion made it necessary that some definite order and ruling should be given to it. The power and the duties of the B. remained much the same during the Middle Ages, from the time of their conception during the third century. The Council of Trent laid down that the B. must be a man of approved learning, of at least 30 years of age, and legitimate. The method of election of Bs. in the Rom. Church has altered considerably since the period of the early Christian Church. Bs. were originally chosen by the people, the remaining Bs. of the prov. having the right of veto. Gradually this power departed from the people and fell into the hands of the provincial Bs., who were subject to a veto from the metropolitan. Next the power passed into the hands of the cathedral chapter, still subject to the veto of the metropolitan and later of the papacy. Gradually the sole power of confirmation passed into the hands of the pope in the W. Church, and with this right of confirmation there came also the demand for the sole right of nomination. This claim was made by the papacy from the early days of the twelfth century, and in Eng. hist. we have the instance of Pope Innocent III. refusing to ratify the appointment either of the nominee of the cathedral chapter or of the king himself, but taking the full right of nomination into his own hands and placing Stephen Langton in the archiepiscopal throne of the prov. of Canterbury. At the present

time in the Rom. Church the pope claims the right to nominate the Bs. in a number of countries, but in most the appointment has to a large extent passed into the hands of the political authorities. Spain, Austria, and France may be taken as instances where the nomination of the Bs. rests nominally in the hands of the head of the State. The pope, however, claims the right of excluding unworthy nominees, he being the sole judge of ecclesiastical unworthiness. The Council of Trent prescribed a formal examination before the cardinals in Rome, but this is now obsolete, academic degrees or equivalent testimonials being accepted as evidence of theological knowledge, evidence of neighbouring ecclesiastics, etc., being received as regards other qualities. In other countries the pope nominates the B. after considering a list submitted by the cathedral chapter, as in England, or the Bs. of the prov., as in Ireland, or the apostolic delegate, as in the U.S.A. Very few cathedral chapters have the right of *electing*, in the strict sense. After election the new B. must be consecrated within three months. On taking possession of his see, he becomes the immediate and ordinary pastor of his diocese, subject to the pope, or in missionary countries, to the Congregation of Propaganda. Even if assisted by a coadjutor B., he is bound to residence, nor may he be absent for more than three months in the year without very grave cause. A metropolitan, usually an archbishop, has little power in the dioceses of his suffragans, except by special delegation or by the Holy See. Oriental Bs. are subject to their own patriarchs and through them to the pope. But as far as the 'power of order' goes, a B. is inferior to none. He has, in the Rom. Church, full and sole authority to confer holy orders, to consecrate, to confirm, to give benediction, and to anoint kings. There are also titular Bs., that is, Bs. who have received the episcopal consecration but have no diocese, and hence are used chiefly to assist other Bs. of the Church, and to represent the pope. The Rom. B. ranks next to a cardinal, is styled in England the Right Reverend, and receives in conversation the courtesy title of My Lord B. The *Catholic Directory* gives the number of archiepiscopal sees throughout the world as 260, the number of episcopal sees as 970, and the number of titular sees as 700. There are 9 archiepiscopal sees in Great Britain and Ireland, divided into 14 dioceses in England and Wales, 4 in Scotland, and 25 in Ireland. The insignia of the Rom. B. are the ring, the pectoral cross, the pastoral staff, the vestments, the mitre, and the throne. In the Reformed or Lutheran Church of the Continent the title of B. remained after the Reformation. In many cases the spiritual duties of the B. ceased, and the title was used purely as a secular and political one. In these cases, however, where the title was used in the spiritual sense, the holder of the title did not claim unbroken apostolic succession. The general term used at the

present time is that of superintendent. The title also still survives in other churches, e.g. in the Moravian.

Anglican Bishops. When due allowance is made for the doctrinal changes of the Reformation, the position and functions of the Anglican Bs. are similar to those of the Rom. Bs. They only have the right of confirmation and the ordination of priests. The method of election, however, differs from that of the Rom. Church, since the nomination of Bs. has been firmly vested in the Crown since 1534, by a statute of Henry VIII., which was re-enacted during the reign of Queen Elizabeth. The nomination, however, is still nominally in the hands of the cathedral chapter, and in the disestablished Church of Ireland in the hands of a synod of the Church. In England, however, the Crown is notified of the vacancy, and a *congé d'être* is given, accompanied by a letter which nominates the choice of the Crown. The chapter is bound by law to elect this nominee, and failing such election the B. can be declared elected by royal letters patent under the Great Seal. The archbishop of the prov. is then notified and proceeds to the consecration of the B. elect. This consecration is usually carried out by the archbishop in person assisted by some or all of the provincial Bs. But a bishopric in England is also a barony, and the B. has to pay homage and take the oath of allegiance to the king in person, according to the old rites of the feudal baronage. In the prov. of Canterbury there are 30 dioceses and in the prov. of York 13. The Church of Wales is divided into 6 dioceses, the Church of Ireland into 12, and the Episcopal Church of Scotland into 7. In England a certain number of seats are allotted to the Bs. in the House of Lords. At an earlier period all Bs. sat in the House of Lords, but since the growth of the Church has led to the appointment of a great number of Bs., it has since been decided that the 2 archbishops, together with the Bs. of London, Winchester, and Durham, should always sit in the House of Lords, the remaining 25 seats being filled by the Bs. in the order of the seniority of their consecration. In addition to the powers which Bs. have of ordination, consecration, and confirmation, they have also a certain jurisdiction over the clergy of their diocese, a jurisdiction which is regulated by the Clergy Discipline Act and the Public Worship Regulation Act. The Bs. of the Church of England are ranked just above the barons of the kingdom, and are addressed by the title of Right Reverend. They have also the legal style of My Lord; they are allowed to marry, but their wives have no title or precedence. The insignia of the Anglican B. are the rochet and chimere, the episcopal throne, the mitre, the pastoral staff, and the pectoral cross.

Suffragan Bishops. Suffragan Bs. are those appointed by the Crown to assist the B. of a diocese who is prevented from performing his duties properly either by physical infirmities or owing to the extent of the diocese. In the Eng. Church he is

appointed by the Crown on the recommendation of the B. of the diocese. There are 31 suffragan Bs. in the Church of England.

The Greek Church. The spiritual functions of the B. of the E. or Orthodox Church are the same as those of the B. of the Rom. Church. The Bs., however, are all chosen from the monastic orders, since the secular clergy are compelled to marry and the B. must be unmarried. The insignia of the B. of this church are much the same as those of the W. Church.

Bishop, a beverage made of wine poured upon oranges, the whole being sweetened and spiced. It can be drunk either hot or cold.

Bishop, Sir Henry Rowley (1786-1855), Eng. musical composer, b. in London. He was trained by Francesco Bianchi, who was at this time settled in London. B.'s first composition performed publicly was the music to a one-act piece called *Angelina*. In 1809 he produced his first opera, the *Circassian Bride*, the scenery of which perished the day after the first performance in the great fire at Drury Lane. In 1810 he was appointed composer to the Covent Garden Theatre. In 1825 he transferred himself from Covent Garden to Drury Lane. He was already one of the directors of the Philharmonic Society, which had been founded in 1813. *Maid Marian and Clari*, or the *Maid of Milan* were produced in 1822; in the latter occurs the famous air *Home, Sweet Home*. In 1830 he was appointed musical director at Vauxhall. In 1841 he became a prof. at Edinburgh Univ.; in 1842 he was knighted, being the first musician who ever received that honour, and in 1848 he succeeded to the chair of music at Oxford. His chief works are *Tamerlan et Bajazet* (a ballet), 1806; *The Circassian Bride*, 1809; *The Maniac*, 1810; *The Virgin of the Sun*, 1812; *The Miller and his Men*, 1813; *Guy Mannering* and *The Slave*, 1816; *Maid Marian and Clari*, 1822; *The Seventh Day* (a sacred cantata), 1833. Two of his best-known songs, *Should he upbraid and Lo, here the Gentle Lark* are settings of Shakespeare's words. His glees are also favourites, but his incidental music to Shakespeare's plays is in great part forgotten. He died in impoverished circumstances, though up to his time few composers ever made more by their work.

Bishop, Isabella (1832-1904), Eng. traveller and author, daughter of the Rev. Edward Bird. *The Englishwoman in America*, her first book, consists of letters written during a visit to Canada at the age of 22. Among many journeys the most important was one she undertook into the interior of China. She wrote many books descriptive of her travels. The following were pub. between 1880 and 1889: *Unbeaten Tracks in Japan*, *Journeys in Persia and Kurdistan*, *Among the Tibetans, Korea and her Neighbours*, *The Yangtze Valley and Beyond*, *Chinese Pictures*. She was married in 1881 to Dr. John B., an Edinburgh physician. In 1901 she rode 1000 m. in Morocco and the Atlas Mts. She was the first woman

to become a fellow of the Royal Geographical Society.

Bishop, William (1554-1624), bishop of Chalcedon, studied theology at Rheims and Rome. In 1583, having been ordained priest, he was sent to the Eng. mission, but unfortunately for his cause, Walsingham kept him some months in Marshalsea prison. Later he was again imprisoned, this time at the Eng. college, Rome, as leader of 'a factious party.' Difficulties arising out of the new oath of allegiance required by James I. led to his third incarceration. In 1622 he was appointed vicar apostolic with ordinary jurisdiction over the Catholics of Great Britain, but d. before he could achieve anything in his new capacity.

Bishop, William Avery, Canadian airman, b. Owen Sound, Canada, in 1894. In the First World War he joined the Canadian cavalry, and later was seconded to the Royal Flying Corps. On the W. front he brought down no fewer than 72 Ger. machines, and then in 1917 he was sent on training work to Canada, returning to France in 1918. He was awarded the M.C., D.S.O., with bar, V.C. (on Aug. 13, 1917), and the D.F.C. At the end of the war he was a member of the Canadian General Staff with the rank of lieutenant-col., and his military career continued in the Canadian Air Force: Gr. Capt., 1931; Air Vice-Marshal, 1936; Air Marshal, 1938. In 1940 he was appointed director of recruiting for the Canadian Air Force. C.B., 1944.

Bishop Auckland, tn. in the par. div. of that name in the co. of Durham, Eng. It is situated about 10 m. S.W. of the city of Durham. Its area is about 651 ac., and its pop. 12,000. At the N.E. end of the tn. stands the bishop's palace, which was originally built by Anthony Beck in the time of Edward I. It has in addition a number of other fine buildings, amongst which may be mentioned the par. church and the tn. hall. It is a railway centre and its pop. is chiefly employed in the mills and collieries which surround the tn.

Bishops, the Seven, the bishops who, called together by Sanctori the primate, signed at Lambeth a protest against the fresh Declaration of Indulgence issued by James II. in 1687. This declaration, proclaiming universal liberty of conscience, was directed against the Church, and was part of the king's 'great design,' that is, the furtherance of his popish policy. The Ecclesiastical Commissioners were ordered to deprive the bishops of their sees, but this they shrank from doing through fear of the people at large, who were opposed to the king's action. The 7 bishops were committed to the Tower on a charge of seditious libel, having denounced the Declaration as illegal. On June 29 they appeared at the bar of the king's bench. In spite of the fact that everything had been done to secure a committal, the packed jury, overawed by public opinion, passed a verdict of 'not guilty.'

Bishop's Castle, mrkt. tn. of Shropshire, Eng., situated some 20 m. S.W. of Shrewsbury, and about 10 m. N.W. of Craven Arms, to which it is connected

by a branch railway. Formerly an important tn. of the marches of Wales, it returned 2 members to Parliament until the passing of the Reform Act of 1832. It is now included in the S. parl. div. of Shropshire. It has lost its former importance, and the anct. castle of the bishops of Hereford, from which it originally derived its name, has fallen into ruins. Area 1867 ac. Pop. 1500.

Bishop's Hatfield, see HATFIELD.

Bishop's Ring, name given to a peculiar tinge in the heavens, a corona or halo near the sun, called after its first observer, Bishop, who noticed it at Honolulu in the autumn of 1883, after the great volcanic eruptions at Krakatoa (Malay Archipelago). Its colour is bluish-white in the centre, shading off to reddish-brown. The diameter of the inner part was about 21°, of the outer 45°. The ring was oval in shape, the phenomenon, associated with the twilight glows and coloured suns (blue, green, silvery, and coppery) that were visible in tropical parts after the eruption, being a diffraction corona due to the dust haze or tiny dust particles ejected from the volcano. All heavier particles were sifted out by gravitation, leaving the rest so nearly of a size as to be able to produce coloured diffraction. The B. R. was most intensely brilliant in the spring of 1884, then it declined gradually, disappearing entirely in June 1886. The same phenomena were visible again, however, after Mt. Pelée's eruption in Martinique (W. Indies), 1902. See Symons, *Eruption of Krakatoa and Subsequent Phenomena*, 1888.

Bishopstoke, see EASTLEIGH.

Bishop's Stortford, mkt. tn. of Hertfordshire, Eng., about 30 m. N.E. of London. In the late Saxon and early Norman days it was the property of the bishop of London; the ruins of the so-called Bishop's Prison are still to be seen. It has an old grammar school (Elizabethan), now the High School. It is chiefly employed in brewing and malting, and holds important horse and cattle fairs. Pop. 10,000.

Bishop's Waltham, tn. of Hampshire, Eng., about 10 m. S.S.E. of Winchester. From the beginning of its hist. it has been the possession of the see of Winchester, and its castle built by Henry de Blois was completely ruined during the Civil wars. Pop. 2600.

Bishop Wearmouth, par. in the co. of Durham, Eng., in reality a suburb of Sunderland, forming the S. dist. of that tn.

Bishop-weed (*Ægopodium podagraria*), species of Umbelliferae common to Britain. It is also called gout-weed, goat-weed, and herb Gerard.

Bitun, see BEHISTUN.

Bisk, or **Blisk**, see BISK.

Biskra, tn. of Algiers about 150 m. S.W. of Constantine. It lies in the Sahara about 360 ft. above the level of the sea, and is on the bank of the Wady B. It is protected by the Fort St. Germain. The climate in the winter months is delightful, and the tn. is a favourite winter resort. The pop. of the tn. is 12,000.

Bisley, par. in the co. of Surrey, England, in the Chertsey parl. div., 7 m.

N.N.W. of Guildford, and 2 m. N. by W. of Brookwood station. The pop. of the par. is about 1000, and B. is chiefly remarkable for the fact that since 1890 the National Rifle Association have held their ann. meeting, in July, lasting for a fortnight, at the ranges on B. Common. The competitions were formerly held at Wimbledon, but the introduction of the small-bore rifle rendered it necessary for the ranges to be longer and safer, and B. was therefore chosen. The competitions are for individual members and teams of the Brit. Empire fighting forces and for civilian members of the National Rifle Association. The most important of the competitions are as follows: The King's Prize, formerly the Queen's Prize, which was founded by Queen Victoria in 1860, is of the value of £250, and carries with it the gold medal of the National Rifle Association. The competitors shoot 7 shots at 200, 500, and 600 yds.; the best 300 are thus selected, who shoot 10 times at 600 and 800 yds.; the best 100 of these shoot 10 times at 800, 900, and 1000 yds. In 1930 the King's Prize was won by a woman for the first time in the hist. of the competition, the winner being Miss Marjorie Elaine Foster of Frimley, Surrey. Other competitions open to 'volunteers' only are the St. George's Prize, and the Prince of Wales's Prize. There are various prizes for teams of riflemen—the Elcho Challenge Shield, for the best 4 'eights' of the different nationalities of the Brit. Isles; for this 15 shots at 800, 900, and 1000 yds. are fired. The Ashburton Challenge Shield is for the best 8 of public school volunteer corps; 7 shots at 200 and 500 yds. are fired. For the Humphrey Challenge Cup, open to univ. teams, 15 shots at 800, 900, and 1000 yds. Teams from the mother country and the dominions and colonies compete for the Kolapore Cup, firing 7 shots at 200, 400, and 600 yds. The experience gained in the field during the First World War confirmed the opinion that the rifle was the chief weapon of the infantry and Cavalry and that efficiency in its use was essential to success. Light and medium machine guns are regarded as powerful auxiliaries, and the degree of assistance they render the other arms is relative to their efficient tactical application. To develop this aspect of small-arm training, special competitions at B. were included in the programmes. The competitions were discontinued during the Second World War, and resumed in 1946, when, however, Army teams were unable to take part owing to the Army's commitments overseas.

Bismarck, tn. in the Land of Lower Saxony, situated 37 m. to the N. of Magdeburg. Pop. 2600.

Bismarck, co. seat of Bureleigh co., and cap. of the state of N. Dakota, U.S.A. It is situated on the l. b. of the Missouri, on the N. Pacific railway. Has an alt. of 1660 ft. above sea-level, and is the head of the navigation of the Upper Missouri. Pop. 15,400.

Bismarck, Otto Eduard Leopold, Prince von, Duke of Lauenburg (1815-98), Ger.

statesman. He was b. on Apr. 1, being the son of a gentleman of good family in Brandenburg. His mother's influence was strong, and was centred in the career of her children. He was educated at a private school in Berlin, and later at the gymnasium of the Grey Friars in the same town. On leaving school he attended the univ. of Göttingen, and after spending a year there he returned to Berlin and passed the examinations necessary for his entrance upon a career in the diplomatic service. He did not, however, enter this at once, but spent the early years of his youth in travelling, and in residence on his home estates. He early took a great interest in public affairs, and his wide reading and extensive travelling at one time seemed likely to allow of his having liberal views, but his religious convictions and the influence of religious revival led him to adopt the opinions in favour of monarchical gov. for which he became so famous. In 1847 he married Johanna von Puttkamer. During the 5 years which followed his marriage he took part in the politics of Prussia. He distinguished himself by the originality and zest with which he defended his position, and he showed by his bitter opposition to various proposed constitutions that he regarded revolutionary movements as tending to reduce to a very great extent the power and influence of Prussia as a Ger. state. In 1851 he was appointed Prussian representative at the Diet of Frankfurt, and during the years which he spent in this position he gained a knowledge of Ger. politics which served him well in the zenith of his career. He was frequently employed on embassies, and he completed sev. difficult negotiations with various princes. The chief result of this 8 years' diplomatic service, however, was to open his eyes to the true position of Austria with regard to Prussia. Up to this time he had regarded alliance with Austria as not only probable, but desirable, since Austria would support the Conservative principles of Christian monarchy. But he learnt now that Austria desired only the abasement of Prussia, and henceforth his policy changed and he saw that the greatness of Prussia could come only after the downfall of Austria. In 1858 he went to St. Petersburg as the Ger. ambas., and for some years remained there with little influence over the home gov. which was Liberal, and distrusted him. But gradually he grew more powerful, the details of events at home were sent him, and at last he was made minister in Paris. Here he renewed his previous good understanding with Napoleon, and finally from here he was recalled in Sept. 1862, and appointed by the king minister president and foreign minister. His appointment as minister president was unpopular. His duty was to carry on the gov. of the country in the face of the opposition of the Lower House. It seemed impossible that he should succeed, and that he could do anything but resign at an early date. But it was necessary to the king that he should succeed and allow time for the reorgani-

sation of the army, and in the face of violent and often personal opposition, in spite of lack of budgets, he was able to perform his work for the king. He soon began to make his power felt. The policy of Prussia had long lacked resolution, now it was to be noted for its absolute resoluteness. To the meeting of Ger. princes at Frankfurt Bismarck refused to allow the king of Prussia to go. Then came the rising of the Poles, and B. earned the gratitude of Russia and the contempt of Europe by offering Ger. aid in its suppression. Finally came the question



BISMARCK

of Schleswig-Holstein, when B. refused to support the Augustenburg claim, but in alliance with Austria defeated Denmark and prepared the way for the ultimate annexation of the prov. by Prussia. The next step was war with Austria. B. saw that the destruction of Austrian power was the only means of Prussian greatness. He waited until everything was in his favour, until he had gained the support of France and Italy, and then in 1866 he struck and was successful. The war of 1866 was in a greater degree than the war of 1870 the turning-point in the development of modern Germany, since it decided that Prussia should be the dominant and unifying power of Germany. He was moderate in his settlement, and required no ter. from Austria, but made a confederation of N. Germany, and refrained from attempting the unity of the whole of Germany lest he should alarm France. The greatness of Prussia was not to be disturbed by lack of calculation — when the time was ripe unity would come by the sword of Prussia, but there were to be no chances of failure. The Austrian war created a new position for B., and he became sole responsible

minister, his title being changed to chancellor in 1871. His political enemies began to be reconciled to him, and from being regarded as the opponent of national unity of Germany, he became its recognised leader. The struggle with Austria led almost of necessity to war with France. At one period armed intervention by the Fr. seemed inevitable, but this was avoided. France now demanded ter. on the left of the Rhine, and being refused proposed, as a return for acquiescence in the unity of Germany, the support of the Prussians in the annexation of Luxemburg and Belgium. War was inevitable, and as in the case of Austria, Prussia bided her time. During the years which followed there were many causes of quarrel, which culminated in the opposition of France to the candidature of a prince of Hohenzollern to the Sp. throne and the publication of the Ems telegram, which made war inevitable. During the Franco-Prussian war B. accompanied the army and conducted negotiations with the Fr., and completed the arrangements for the entrance of the S. states into the federation. His work after 1871 was occupied with the domestic policy of Germany. He had a long and strenuous quarrel with the Rom. Catholic Church, and also presided over the Congress of Berlin of 1878. The death of the Emperor William in 1888 was a grave blow to him, and in 1890 he was dismissed by the Emperor William II. A reconciliation took place in 1893, and his eightieth birthday in 1895 was regarded as a national event.

Bibliography. There are a great many works on B. Among the better known earlier works are: Bismarck's *Gedanken und Erinnerungen* (Eng. trans. *Bismarck: his Reflections and Reminiscences*, 1898); Lowe's *Bismarck*, 1895; Headlam's *Bismarck and the Foundation of the German Empire*, 1899; *The Love Letters of Prince Bismarck* (Eng. trans., 1901); Sybel's *Die Begründung des deutschen Reichs*, 1889-1894; Kohl's *Fürst Bismarck*, 1891-92; Blum's *Bismarck und seine Zeit*, 1894-95; and for bibliography, Schulze and Koller's *Bismarck-Literatur*, 1896. Among other works, including the more recent, are: R. von Keudel, *Fürst und Fürstin Bismarck* (Berlin), 1902; O. Klein-Hattungen, *Bismarck und seine Welt*, 2 vols. (Berlin), 1902-4; M. Lenz, *Geschichte Bismarcks* (Leipzig), 1902; P. von Roel and G. Epstein, *Bismarcks Staatsrecht* (Berlin), 1903; S. Whitman, *Personal Reminiscences of Prince Bismarck* (London), 1902; *Bismarcks Briefe an seine Braut und Gattin*, pub. by Prince Herbert Bismarck (Stuttgart), 1900; *Bismarck's Letters to his Wife*, 1870-71, trans. into Eng. by A. Harter (New York), 1903; G. Wolf, *Bismarcks Lehrjahre* (Leipzig), 1907; A. Roethlisberg, *Bismarck als Nationalökonomisch-Wirtschafts- u. sozialpolitiker* (Leipzig), 1908; E. Marcks, *Bismarck, Eine Biographie* (Stuttgart), 1907; Sir C. Grant Robertson, *Bismarck*, 1918; J. V. Fuller, *Bismarck's Diplomacy at its Zenith*, 1922; O. Graudenwitz, *Bismarcks letzter Kampf*, 1888-98,

1924; P. Haake, *Bismarcks Sturz*, 1922 (*Schriften der historischen Gesellschaft zu Berlin*); W. Schuester, *Bismarcks Sturz* (Leipzig), 1921; S. Schweitzer, *Bismarcks Stellung zum christlichen Staate* (Berlin), 1923; M. E. Smith, *Bismarck and German Unity* (New York), 1923; E. Ludwig, *Bismarck: Geschichte eines Kämpfers*, 1926.

'**Bismarck, The.**' Ger. battleship, given officially as of 35,000 tons, and said to have been a 50,000-ton boat, and, in 1941, the largest and newest of Ger. warships; centrally controlled; said by the Gers. to be unsinkable; carrying a great armament and over 2000 men; sunk on May 27, 1941, by units of the Royal Navy after a pursuit lasting nearly 5 days over a distance of 1750 m. The *B.* was first sighted in the Denmark Strait between Iceland and Greenland on May 23, and was sunk about 400 m. due W. of Brest. The only damage to the Brit. ships apart from the loss of the *Hood* (q.v.) was slight damage to the *Prince of Wales*. During the pursuit successive torpedo attacks were made both by aircraft of the Fleet Air Arm and by destroyers. These succeeded in slowing up and finally crippling the *B.* Naval units taking part included forces from the Home Fleet, from Gibraltar, and ships engaged on convoy duties in the Atlantic. She was eventually sunk after being hit by 8 or 9 torpedoes, and there were only about 100 survivors, further rescue work being abandoned owing to the presence of a Ger. submarine. Had the *B.*—which was accompanied for some time by a 10,000-ton cruiser, *Prinz Eugen*—escaped, her raiding potentialities would have been a very grave menace to allied shipping, the losses of which at this time were already nearly 500,000 tons monthly. Following the loss of the *Hood*, it was imperative to restore the balance, and the pursuit and sinking of the great Ger. battleship, which was on its first ocean voyage, was a triumph of Brit. sea and air power. Precisely why the *B.* had sailed into the Atlantic is not certainly estab., but the mere presence of so powerful a ship in the Atlantic, where it might, at any moment, make its appearance off Iceland, Greenland, or the West Indies, would have profoundly altered Brit. naval dispositions in all oceans. The pursuit demonstrated not only the importance of sea-power, but the value of reconnaissance aircraft, without whose co-operation the *B.* would not have been located. The *B.* and attendant cruiser—which latter succeeded in escaping to Brest—were first located by Brit. aircraft in Bergen harbour. After they had reported her departure the *Norfolk* and *Suffolk* (cruisers) took up positions in the Denmark Strait, but, owing to snow, sleet, and mist it was difficult to keep her in sight. The 2 Brit. cruisers successfully shadowed her during the night of May 23. Other ships now took up dispositions at high speed in order to intercept the *B.* and bring her to action. Early on May 24 the *Hood* made contact and in the ensuing engagement the *B.* was at one time seen

to be on fire. The *Hood* then received an unlucky hit in the magazine at 13 m. range, and blew up. Despite the efforts of the *B.* to shake off the *Norfolk* and *Suffolk* those ships maintained touch. On the evening of the 24th the *Prince of Wales* (battleship) joined action for a short time, but the Ger. ships turned away and swung round on a southerly course. Other Brit. naval forces were now coming up, and during the night naval torpedo-bombing aircraft from the *Victorious* delivered an attack from a considerable distance, one torpedo being seen to hit the *B.* After 3 a.m. on May 25, the Brit. ships lost touch with the enemy owing to low visibility, the *B.* being then 350 m. S.S.E. of S. Greenland. The main body of the Home Fleet, including the new battleship *King George V.* (q.r.), was now steaming at a high speed in a south-westerly direction from N. waters, while another force, including the *Rodney* (battleship) and *Ramillies* (battleship), which were escorting convoys, proceeded also to converge in the direction taken by the *B.* Extensive air searches were organised by the Coastal Command aircraft, and by the Canadian Air Force stationed at Newfoundland; and at about 10.30 a.m. on May 26 the *B.* was again located, by a Catalina flying-boat, about 550 m. W. of Land's End. The Catalina was attacked by the *B.* and lost touch, but at 11.15 a.m. the *B.* was again spotted by naval aircraft from the *Ark Royal* carrier. The *Prinz Eugen* had, however, parted company, and was not seen again. The cruiser *Sheffield* was now detached to shadow the *B.* Another force of naval aircraft now attacked, and torpedoes were seen to hit the *B.* amidships, and on the starboard quarter. The *B.* now slowed round in 2 complete circles, with her speed much reduced. Between 1.20 and 1.50 a.m. on May 27 the *B.* was attacked with torpedoes striking the ship and causing a fire on the forecastle. She now appeared to be stopped, having sailed 1750 m., and being 400 m. due W. of Brest—where but for the skill and persistence of Brit. aircraft she might soon have joined the *Gneisenau* and *Scharnhorst*. For the greater part of May 25 and 26 the *B.* had been lost to the Brit. fleet, and they were afraid they had lost her altogether. It was only in the teeth of a howling gale and with the flight deck wet with flying and treacherous spume and the ship plunging and rearing in tremendous seas that Swordfish torpedo-bombers took off from the *Ark Royal* and hit the *B.* with 2 vital torpedoes that sensibly reduced her speed; and but for the urgent need of crippling the battleship to enable the Brit. capital ships to close and bring her to action not a single aircraft would have been allowed to take off. During the night of May 26, and in the early hours of the following day Brit. warships were all round the doomed Ger. ship, the courage and tenacity of whose crew, who went on fighting when their position was hopeless, cannot be gainsaid. At dawn the Brit. ships closed in in squalls of rain to within

13 m. The *B.* was now yawing from side to side, and scarcely under control; but she was still capable of fairly accurate salvos. After 15 min. of terrible punishment her fore turret went out of action with the guns cocked up uselessly in the air. There was a great fire raging amidships. With bombs and torpedoes from the air and torpedoes and gun-fire from the ships, the Brit. fleet closed in still nearer on the *B.*, which, with her steering-gear destroyed, was now circling at 12 knots out of control. But she would not strike her colours, and, finally, the capital ships having sailed away, the *Dorsetshire* was detailed to dispatch her. The cruiser, creeping cautiously across the *B.*'s bows, 2 m. distant, passed down the port side, and fired her torpedo. The *B.* was now hidden in huge clouds of smoke, through which, amidships, was the glare of flames. The torpedoes took her. There was a tremendous explosion under water, and the *B.* listed to an angle of 45 degrees, steadied for a moment, then heeled right over and slid beneath the waters.

Bismarck Archipelago, group of is., which lie to the N.W. of the Solomon Is., and to the N. of the E. extremity of New Guinea. Their former name was New Britain Is., and they were discovered by Dampier in 1699, but in 1885 Great Britain came to an agreement with Germany, by which they were assigned to the Ger. sphere of influence, and their names were then changed. In Sept. 1914 they were occupied by an Australian force, and were temporarily under military rule. Since then they have formed part of the Australian mandated ter. of New Guinea. On Feb. 11, 1942, civil administration was suspended, and the ter. came under military control. An Act of 1945 provided for the gradual reinstatement of the civil administration. The prin. is. of the archipelago are New Britain, formerly called Neu Pommern (area 10,000 sq. m.), and New Ireland, formerly called Neu Mecklenburg (area 3000 sq. m.), which are separated from each other by St. George's Channel, in which the currents are of great violence and subject to no fixed rules; Dampier Strait separates New Britain from New Guinea, and another important is., Lavongal, formerly Neu Hannover (area 530 sq. m.), lies off the north-western extremity of New Ireland, from which a tortuous system of reefs separates it; Duke of York Is. (area 22 sq. m.) and the Admiralty Is. (area 600 sq. m.) are also important. The archipelago, which is of coral and volcanic formation, is mountainous and well wooded. In New Britain, the interior of which is but little known, there are sev. active volcanoes. It is practically undeveloped, the only plantations being around the coasts. Coco-nuts are the chief crop, but coffee and cocoa have recently been planted. The is. has many fine but little used harbours, the chief being Simpson Harbour on Blanche Bay. Rabaul, the seat of gov., has an anchorage for all ships and a fine new jetty. It was damaged by volcanic eruptions on May 29, 1937, and frequently bombed by allied aircraft in

the Second World War. Under Ger. rule the cap. was Herbertshöhe (now Kokopo), 14 m. to the S.E. New Ireland has been more thoroughly explored than New Britain. It is no longer actively volcanic, but in other respects is similar to the larger is. The chief tn. is Kavieng, on the N. coast of Nusa Harbour. The climate of the archipelago is, on the whole, healthy, and the soil is very fertile. Cotton plantations were started by the Gers. with native labourers. The inhab. of the is., mostly Papuans, are skilled in agriculture. Coco-nut fibre, copra, cotton, rubber, coffee, tortoise-shell, trepang, mother-of-pearl, and fruit are the chief articles of trade. Shells threaded on long strips of split cane form the money used by the natives. Total area 19,200 sq. m. The native pop. is about 155,000. In the first few months of the war (1941) the Jap. invading forces swept over New Britain and New Ireland. In Apr. 1943 the Jap. suffered much from allied air attack over New Britain. In May and June Raboul was repeatedly bombed. There was a record destruction on Oct. 25 of Jap. aircraft at Rabaul. On Dec. 16 Amer. troops landed on Aravo Peninsula in S.W. New Britain, and secured a firm foothold. In the earlier part of 1944 the Jap. Seventeenth Army, having failed to overcome the Amer. beach-heads, retired to Rabaul. For details of operations see PACIFIC CAMPAIGNS, or FAR EASTERN FRONT, IN SECOND WORLD WAR.

Bismarck-Schönhausen, Herbert Nikolaus, Prince von (1849-1904), eldest son of Prince Otto von Bismarck. He served in the army, 1870-71, then entered upon a diplomatic career, becoming secretary to his father. He was secretary to the embassies in turn of Rome, London, St. Petersburg, and was sev. times charged with important negotiations, including a mission to London in 1881. In 1885 he was made secretary of state for foreign affairs. He married Countess Margarete Hôvos.

Bismuth, a metallic element. It was probably known in the Middle Ages under the name *marcasite*, but was often confused with zinc and antimony. It is a comparatively rare metal, usually occurring in nature in association with ores of silver and cobalt. The greater part of the world's supply comes from Schneeberg in Saxony, Joachimsthal in Bohemia, Cornwall, Bolivia, and Peru. The ore is roasted and then smelted with iron, carbon, and slag; 2 layers are thus obtained, the lower one containing nearly all the B., which may be removed by tapping the lower end of the cylindrical retort in which the process is carried out. The crude B. is then purified by heating it on an inclined iron plate, when the pure B. melts and runs down into the receptacles provided. B. is a hard brittle metal with a reddish-white colour, its sp. gr. is 9.75, it melts at 264° C., and expands as it solidifies. It burns with a bluish flame and readily oxidises at ordinary temps.; it also combines directly with sulphur and with elements of the chlorine group. B. forms many useful alloys with low melting-

points under the general name of fusible metal. These alloys are used in making type metal, as their property of expanding on solidification serves to produce a good cast; for soldering, and for the manuf. of safety plugs in boilers, as the constituents of the alloy can be so arranged as to provide a melting-point at a particular temp. B. forms 4 oxides, of which the yellowish trioxide is the most important. Two chlorides, 2 sulphides, and a sulphate may also be prepared. Most valuable of the B. compounds is the nitrate together with the basic nitrates formed by diluting the acid solution with water; magistery of B., flake white, and Sp. white are some of the salts thus produced. The basic carbonate prepared by treating B. nitrate with ammonium carbonate is used in medicine for easing painful gastric affections, such as dyspepsia, diarrhoea, ulcers, and cancer. The action is that of a direct sedative, the salts coming into contact with the nerve-endings of the mucous membrane. The insoluble salts are opaque to X-rays, and abnormalities in the structure of the alimentary canal can be demonstrated on a fluorescent screen by following the course of a large dose taken as an emulsion.

Bisnagur, see *BIJANAGHAR*.

Bison, the name of a ruminant allied to the ox in the family Bovidae, and comprises only 2 species, the European and the Amer. Bs. The European B. (*B. europaeus*) is often confused with the aurochs, and is now to be found only occasionally in Europe, as in the forest of Byelovitsa (Bialowiza) in Lithuania. It is more than 6 ft. high at the shoulders and is a most powerful and formidable animal, able to level with a thrust a tree 6 in. in diameter. It is massive, has thick, elongated withers, and its head is covered with a mane, often a foot in length, which is thickest in winter and inconspicuous in the females; the eyes are small and savage. It has a strong sense of smell and can be approached only from the leeward. In habit it is herbivorous and fond of the barks of trees; it is gregarious, but domestic cattle rouse its fury, and it attacks them fiercely; attempts to mix the breed have failed. A short deep grunt is its method of articulation, and can be heard at a considerable distance. The Amer. B. (*B. americanus*) differs little from the European B., but is smaller, shaggier, and fiercer, and can withstand the attack of any animal, except the grizzly bear. See *BUFFALO*. It is gradually becoming extinct, but in a few places, such as Yellowstone Park, herds are preserved.

Bissagos Islands, a group of is. off the W. coast of Africa, consisting of about 16 large and a number of small is.

Bissão, seaport in Portuguese W. Africa, situated E. of the is. of the same name, in the mouth of the Rio Geba. Pop. 2000.

Bisschop, Christoffel (Christoph), Dutch genre-painter, b. at Leeuwarden, 1828. He was a pupil of Schmidt and of Van Hone, also later of Comte and Gleyre in Paris. Among his works are 'Trouwdag'

(Wedding Day), which won him a reputation, 1871; 'Rembrandt going to a Lecture on Anatomy,' 1867; 'Burgomaster's Daughter'; 'Cradle Painter'; 'Curiosity Shop'; 'The Victim'; 'Christening Day in Friesland'; 'The Lord has given, the Lord has taken away,' 1880; 'Visit to Grandmamma,' 1883.

Bissextile, or **Bissextus Dies**, see LEAP YEAR.

Bissell, George Edwin (1839-1920), Amer. sculptor, son of a marble-cutter, b. at New Preston (Conn.), Feb. 16, 1839. Served during Civil war (1862-65). In 1875 went to study in France and Italy. Among his chief works are a national monument at Waterbury, Connecticut, a statue of Abraham Lincoln at Edinburgh, a relief of 'Burns and Highland Mary' at Ayr, and emblematical groups at New York, Buffalo, St. Louis, and elsewhere.

Bissen, Herman Wilhelm (1798-1868), Dan. sculptor, b. in Slesvig, and educated under Thorwaldsen at Rome, who on his death left instructions in his will that B. should finish his uncompleted works. B. was in 1860 appointed president of the Academy of Fine Arts at Copenhagen. Amongst his chief works are: 'Cupid sharpening his Arrow,' 'Valkyrie,' an 'Apollo,' and a 'Venus.' One of his most famous works, 'Orestes,' perished in the fire at Copenhagen, 1884.

Blessing, Moritz Ferdinand von (1844-1917), Ger. general. Appointed gov.-general of Belgium in 1915, in succession to Field Marshal von der Goltz. Perpetuated the arbitrary gov. of his predecessor and introduced a new judicial system, under which all idea of the personal safety of the populace was destroyed because military commanders had the power to inflict punishment on innocent persons when the guilty could not be found. B. will probably be notorious chiefly as the official who signed Nurse Cavell's warrant for execution.

Bissolati-Bergomaschi, Leonida (1857-1920), It. Socialist, b. at Cremona; son of Demetrio Bergomaschi. Took surname of his stepfather, Prof. Bissolati. Practised law, joined Socialist party formed 1892; first editor of Socialist paper *L'Avanti*. Entered Chamber of Deputies as member for Pescarolo, 1897. Represented Budrio from 1900; and, from 1908 till death, the second div. of Rome. Seceded from the party in 1911; formed Reformist group. Entered (without portfolio) Bosselli Gov., 1916; remained under Orlando; resigned, 1918.

Biton, in entomology, the name given by Dr. Leach to a genus of lepidopterous insects of the family Geometridae. Three Brit. species of these moths are *B. prodromaria*, the oak beauty; *B. betularius*, the pepper moth; *B. hirtarius*, the brindled beauty.

Bistre, a warm brown-coloured pigment, which is prepared generally from beechwood soot.

Bitritsa, vil. of the Byelorussian S.S.R., formerly in Poland, 30 m. N.E. of Vilna, just E. of the Vilna-Dvinsk railway. It was the scene of fighting between Rus-

slans and Gers. during the latter's offensive in Sept. 1915.

Bitritz, tn. of Moravia, Czechoslovakia, situated on a riv. of the same name, which is a trib. of the Szamos. Tanning is practised, and there are spinning-mills. Pop. 10,000.

Bitche (Ger. **Blitsch**), a tn. in the dept. of Moselle, N.E. France, situated about 25 m. S.E. of Saargemund. It is strongly fortified, the citadel having been hewn out of solid rock. It was twice unsuccessfully besieged, in 1815 by the Prussians, and 1870 by the Gers. It was taken by the Fr. in 1766, and by the Gers. in 1871. Pop. 3500.

Bithur, tn. in the Cawnpore dist. of the United Provs., India. It is situated a little over 10 m. from the tn. of Cawnpore, and has a pop. of about 7000. Interest in the tn. is due to the fact that Nana Sahib made it his headquarters in the mutiny of 1857. Havelock captured and stormed the tn. in July 1857, when the palaces of the Nana were destroyed. Pop. 2400.

Bithynia, an anct. div. of Asia Minor separated from Europe by the Propontis and the Bosphorus, and bounded on the N. by the Black Sea. On the E. it adjoined Paphlagonia, on the W. and S.W. Mysia, and on the S. Phrygia. It is mountainous and its mts. are well wooded, but near the sea coast there are many fertile valleys. Its natural sources of wealth are not yet fully developed, although its forests provide the material for an excellent and flourishing industry, and coal is also known to exist in the country. The Bithynians are supposed to have been of Thracian origin. They became part of the Lydian monarchy under Croesus, and later were conquered by the Persians (546 B.C.). B. became, however, ultimately one of the most flourishing of the smaller kingdoms of Asia Minor, its cap. Nicomedia being founded by the first of its kings nearly 300 years B.C. The last king, Nicomedes III., made the Roms. his heir in 74 B.C. It became a Rom. prov., and for some time under Trajan was governed by the younger Pliny. In 1298 the Turks under Osman invaded the country, and it became in the course of time a Turkish possession. The sole flourishing tns. at the present time are Prusa (Brusa), Ismid (Nicomedia), and Scutari.

Bitlis, tn. in vilayet of Bitlis, Turkey, situated on the Bitlischai, a trib. of the Tigris, in a high valley, 4700 ft., amid the wild mt. scenery W. of Lake Van. Pop. 35,000 (majority Kurds). An old Arab castle is said to occupy the site of a fortress built by Alexander the Great. The prin. industry is the weaving of red cloth. Tobacco is largely grown, and there is a trade in gum and fruit. During the First World War inhabs. refused to obey Turkish order to fight against Brit. They did, later, raise some troops which were maltreated by the Turks. On approach of Russian force against Turks, B. again revolted in summer of 1915.

Bitolj, see MONASTIR.

Biton and **Cleobis**, sons of Cydippe a

priestess of Hera at Argos. Their love for their mother prompted them to drag her chariot to the temple of Hera, a distance of 45 stadia, or nearly 6 m. The mother prayed that Hera might grant them the best that mortals might have; they died during the night in the temple while asleep.

Bitonto, tn. in the prov. of Bari, Apulia, Italy. Pop. 33,000. It lies 10 m. W. of the tn. of Bari. The old medieval walls still remain, and there is a fine early sixteenth-century palace, but its chief glory is the unrestored and unspoiled cathedral, a fine example of It. Romanesque architecture.

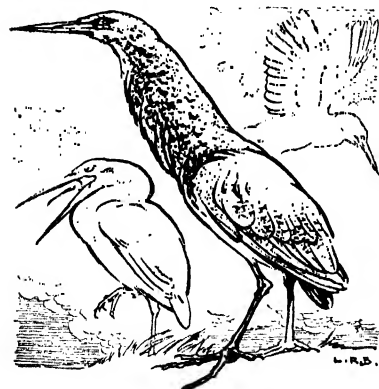
Bitter Apple (*Cucumis* or *Citrullus colocynthus*), fruit of a species of Cucurbitaceae, allied to the cucumber. It is a round, yellow fruit, and the pulp is used as a purgative under the name of colocynth. Other names for it are bitter cucumber, colocynth gourd, and colocynthida.

Bitter Apple, or **Cucumber**, see **COLOCYNTH**.

Bitterfeld, tn. and dist. in the prov. of Saxony, Prussia, on the l. b. of the Mulde, 20 m. from Leipzig. There are lignite mines, and iron foundries. Its manufs. are earthenware, drain-pipes, roofing felt, etc. Pop. 21,000. In the Second World War the tn. fell to the U.S. First Army on Apr. 22, 1945.

Bitter Lakes, known as the Great and the Small, are lakes near Suez, and they form part of the Suez Canal. These lakes were almost dry when the canal was cut.

Bitterling, small fish, not much over 2-3 in. long, of the carp family. It is somewhat like the roach, and is so named from its taste.



BITTERN

Bittern, wading bird, buff-coloured, speckled with black and tawny brown, living in swampy ground. It has a short neck and long bill; its habit of holding neck and bill in a vertical position conceals it among the reeds, where it rests by

day, hunting its food—frogs, reptiles, and fish—towards nightfall. Its loud booming call marks the breeding season. The genus *Botaurus* belongs to the family Ardeidae, which includes the herons. The European B. (*Botaurus stellaris*) is rarely seen now in Great Britain, but it was once common, especially in the Fens. The bird has recently been reintroduced into Norfolk, especially in the Broad, where its booming note was once a feature of those haunts.

Bitter Root Mountains, range of mts., with a maximum altitude of between 9000 and 10,000 ft., forming part of the boundary between Idaho and Montana, U.S.A. It is an outlying part of the Rocky Mt. system, branching off S., where the main range turns E. through Montana.

Bitters, beverages containing substances imparting a bitter taste, and usually including about 40 per cent of alcohol. The bitter principle is generally derived from orange-rind, quinine, quassia, angostura, gentian, or hops, and is imparted to the liquid by simple maceration and filtration, or, in the case of some household remedies, infusion and decantation. The action of most B. is to stimulate the sense of taste and the secretion of the gastric juices; they are therefore mild tonics and appetisers. Any other remedial quality possessed depends upon the nature of the drug included, apart from its bitter taste. Many of them are used as digestives before a meal, such as the beverages known as orange, angostura, and peach B. Their occasional use is harmless, but continual use has an irritating effect on the stomach.

Bitterspar, general name for the crystallised varieties of dolomite, or magnesian limestone. It possesses various degrees of transparency, and has a pearly lustre, whence it has been called pearlspar.

Bittersweet, popular name of the 'woody nightshade,' *Solanum dulcamara*; it derives its name, a translation of *dulcamara*, from the taste, which is first bitter and then sweet. It is found in hedges and thickets, with a slender climbing stem, pointed leaves with 2 projections at the base; the flowers, resembling those of the potato, are lilac-coloured with yellow centres. The scarlet fruit, growing in clusters, is poisonous.

Bitter Vetch, see **OROBUS**.

Bitterwood, name given to the product of many plants, but especially to that of *Picraena excelsa*, a species of tropical Simarubaceae. In this case it is also known as Jamaica quassia, which is a good tonic. *Xylopi sericea*, a species of Anonaceae, is a tree with bitter wood which grows in Brazil, and *P. glabra* is a W. Indian species.

Bitumen, a term applied generally to minerals of vegetable origin, consisting of complex hydrocarbons. They comprise many species, ranging from natural gas, through petroleum and asphalt, to the softer varieties of coal. Natural gas is dealt with separately, as also is petroleum, which passes by insensible gradations into maltha, or viscid B., and that again into asphalt (q.v.), or solid B. Of the

viscid Bs., the most important is elaterite (*q.v.*), found in Derbyshire. A mineral tar also occurs in Derbyshire and near Dingwall in Ross-shire. A substance with some similarities to elaterite is found in the Settling Stones lead mine in Northumberland; this occurs in the form of drops encrusting the walls of a vein of lead ore. It is hard and brittle, and does not melt under 200° C. Other Bs. are berengelite, a dark brown resinous substance found in Arica, Peru; hielzite, a brittle black solid found in Transylvania; plauzite, a dark-brown coal-like substance obtained amongst the brown coal at Plauze in Carniola; wurtzite, a hard black solid; and uinitate, or gilsonite, both found in the Uinta Valley, near Fort Duchesne, Utah; and albertite, a jet-black substance, resembling asphalt, which is obtained in Nova Scotia.

Bituminous Coals, see under COAL.

Bituriges, a Celtic people of anc. Gaul. They were divided into the B. Cubi, whose cap. was Avaricum (Bourges), and the B. Vivisci, cap. Burdigala (Bordeaux). The former joined in the rebellion of Vercingetorix (52 B.C.), their cap. was taken by the Romans, and its people massacred.

Bitzius, Albrecht (1797-1854), Swiss novelist, usually known by his pseudonym, Jeremias Gotthelf, the name of the prin. character in his first novel *Bauernspegel*. He was the son of a pastor, and became his father's assistant in 1822, and from 1831 till his death in 1854 was pastor at Lützelfüh, in the Upper Emmenthal. His peasant-life novels include *Bauernspegel*, 1837; *Leiden u. Treaden eines Schulmeisters*, 1838; *Uli der Knecht (Uli der Farm Servant)*, 1841, and its sequel, *Uli der Pächler (The Tenant)*, 1849; *Wie Bubi Jöcker haus-haltet*, 1843; *Käthi die Grossmutter*, 1847; *Die Käserei in der Viehfreude*, 1850; *Erlebnisse eines Schulbauers*, 1854.

Bivalves, **Pelecypoda**, or **Lamellibranchia**, one of the largest groups of molluscs, characterised by their 2 bilaterally symmetrical, limy plates or valves to the right and left of the body. The mantle secretes a covering over the whole outer surface, and this forms at the dorsal middle line an elastic membrane, called the hinge-ligament, which connects the 2 valves. The body of this mollusc is itself bilaterally symmetrical and is compressed; the head is rudimentary; the foot is usually present, when it is ploughshare-shaped, may contain some of the viscera, and has often a byssus gland which serves in the attachment of the animal. The nervous system consists of 3 pairs of ganglia: the digestive system commences with a well-ciliated mouth which catches small particles of food drifting in the water, there are no jaws or tongue, and a short oesophagus leads to the stomach; respiration is effected by means of 2 ctenidia, which are developed right and left of the elongated body. The heart consists of a ventricle and 2 auricles, and the reproductive organs occur in the foot, the sexes being usually distinct. B. are found all over the world and more than 5000 species are known to exist. They

live chiefly in the sea, where they are found at all depths, but some inhabit fresh water; muddy and sandy shores are those which they prefer. Nearly all feed on vegetable matter, but the Septibranchia, a wholly marine order, are carnivorous. Many remain attached to one spot during life, others can crawl slowly, while others again swim by opening and shutting the valves of their shell. Some, *e.g. Teredo*, are boring animals, and have a damaging effect on the wood of ships. They are of use to man in various ways: some are edible, *e.g. mussels, cockles, oysters*; savages use the shells in place of coins; pearls are obtained from oysters, and mother-of-pearl is of value commercially; many B. are used as bait in deep-sea fishing. In the classification of Lamellibranchia zoologists are divided, but most agree in grouping them into 4 orders: Protobranchia, with gill-filaments flattened and not reflected, *e.g. Yoldia*; Filibranchia, with long, reflected gill-filaments, united by ciliary junctions, *e.g. mussels*; Eulamellibranchia, with branchial filaments united by interfilamentar and interlamellar junctions, both vascular, *e.g. clams, cockles, freshwater mussels*; Septibranchia, with gills transformed into a muscular septum, *e.g. Poromya*.

Bivouac (from Ger. *Beiwache*, *bei*, by, and *wache*, watch), military term for a temporary encampment. No tents are used, and each soldier remains fully dressed, with his arms close at hand. At first only the guards had to B. while the rest of the army remained in camp, but since the time of the Fr. Revolution it has been customary for forces actually engaged or about to be engaged in conflict to B. This enables them to dispense with tents and all encumbrances, and facilitates speedy action. Temporary protections of straw and branches are erected if possible, and the position is chosen so as to afford as much protection from the weather as can be obtained. There are various plans for Bs., according to the regiment and occasion, but the chief object always is that all should be as ready for action as possible.

Biwa Lake, lake of Japan, in the Is. of Honshu. Tradition has it that the lake was formed by an earthquake in 286 B.C. It is 12 m. broad, and 36 m. long, and is famous for its beauty, especially at its S. extremity. It is 10 m. by water from Kioto. The R. Yodogawa drains it, and the Lake Biwa Canal connects it with the Kamogawa Canal. The waters are used for the factories and mills of Kioto.

Bixa Orellana, plant, the single species of the genus *Bixaceæ*; it grows in tropical America and the W. Indies. The plant forms a small tree, which bears seeds covered with a soft, sticky, vermillion-coloured rind, which furnishes the annatto (or arnatto) of commerce, used in dyeing confectionery.

Bixby, William Herbert (1849-1928), Amer. military engineer, b. in Charlestown, Mass. After graduating in 1873 at the United States Military Academy, he joined the Corps of Engineers and

became prof. of engineering at W. Point. In 1880 went to France and graduated the next year from the *École de Ponts et Chaussées*. He became an authority on the control of floods, and, later, with the rank of general was appointed head of the Mississippi Riv. Commission; also chief of the Engineers, U.S. Army, 1910-13. In 1912 directed the raising of the U.S.S. *Maine* in Havana Harbour.

Biysk, or **Bisk**, tn. of the Khakass autonomous prov., S. Siberia, R.S.F.S.R. It is an important wheat centre by the Rs. Ob, Buja, and Katun, near the confluence of which it lies. From B. a motor road leads over the Altai Mts. into Mongolia. Pop. 80,000.

Bizerta, seaport, fortified harbour, and naval station in Tunisia, belonging to France, situated in a commanding position on the N. African coast of the Mediterranean Sea, 420 m. S.E. from Toulon and 60 m. by rail N.N.W. from Tunis. Pop. 35,000. The port consists of an outer harbour of 300 ac. protected by a breakwater and 2 jetties, a quayed and canalised channel 2600 ft. long, leading to the commercial harbour and thence to Lake Bizerta, a deep circular inlet of the sea; at Sidi Abdallah, in the S.W., lie the dry docks, quayage, and other works necessary to make B. a fully equipped station of the highest importance to Fr. naval strength in the Mediterranean. It is strongly fortified by coast batteries, second only to Toulon. The modern tn. of B. (*Arab. Ben-zert*), lies N. of the canal, and S. of the Arab tn. and the anct. citadel. The naval and military tn., Ferryville, is separate. The anct. name of the harbour, always the safest on the coast, was Hippo Zaritus or Diarrhytus, once a Tyrian, later a Rom., colony. It was taken by the Arabs in the seventh century, and by Spain in 1535. Long neglect allowed the fine harbour to decay utterly till the declaration of the Fr. protectorate over Tunis in 1881, and its subsequent rise to importance as a naval station. It was occupied by the Gers. during the Second World War, and was retaken by Amer. troops on May 7, 1943. See AFRICA, NORTH, SECOND WORLD WAR CAMPAIGNS IN.

Bizet (Alexandre César Léopold) Georges (1838-73), Fr. musical composer, b. near Paris, the son of a teacher of singing. He studied under Halévy at the Conservatoire, and won the Prix de Rome, 1857, with a cantata, *Clovis et Clotilde*. His operas, *Les Pêcheurs de perles*, produced 1863, *La Jolie Fille de Perth*, 1867, and *Djamileh*, 1872, suffered in popularity from the charge of 'Wagnerism,' reserved at the time with little understanding for all music which appeared to the critics as strange or progressive. His music for Alphonse Daudet's drama, *L'Arlesienne*, 1872, was more successful. His masterpiece, *Carmen*, 1875, was written to an adaptation by Meilhac and Halévy of Mérimée's tale of the same name. His symphony in C, unrecognised till recently, and written when he was 16, is now frequently performed. B. married a daughter of

Halévy in 1865. He d. shortly after the first production of *Carmen*. See lives by Pigot, 1886 (revised ed. 1911); Bellaigue, 1891; Weissmann, 1907; D. C. Parker, 1926; Martin Cooper, 1938; Winton Dean, 1948.

Bizzari, Pietro (1530?-84?), It. poet and historian. His prin. historical works, written in Lat., are: *History of the War in Hungary*, and *History of the Cyprian War between the Venetians and Solymans*.

Bjørregaard, Henrik Anker (1792-1842), Norwegian author. Educated for the law, and became a chief justice. Among his best-known books are *Blandede Digtinger*, 1829-30, and *Digtinger*, 1848; he is also the author of the Norwegian national anthem, *Sønner av Norge*, and an operetta, *Fjeldeventyret*, 1825, which took a high place in Norwegian drama.

Bjela, tn. of Poland, situated on the R. Krzna, and in the prov. of Siedle. It has a considerable corn trade.

Bjerknes, Vilhelm (b. 1862), Norwegian physicist, son of a well-known prof. of mathematics. B. became (1932) prof. of the Physical Institute of Oslo Univ., where he was educated. He was appointed lecturer in physics in Stockholm Univ. in 1893 and, later, prof. there. In 1932 the council of the Royal Meteorological Society of Great Britain awarded him the Symons gold medal for distinguished work in connection with meteorological science. Publications include: *Dynamic Meteorology and Hydrography*; papers on electric oscillations in *Annalen der Physik*, 1891-95.

Björn of Scardsa, or **Björn Jonsson** (1575-1656), Icelandic historian. Author of *Annals*, written with considerable insight in beautiful language. For his works, see Vigfusson and Powell's *Corpus Poeticum Boreale*, 1883.

Björneborg, tn. of Finland, 60 m. N.N.W. of Åbo. It is situated at the mouth of the R. Kumo in the gulf of Bothnia. Shipbuilding is the chief industry, and it exports fish, timber, and pitch. Pop. 17,000.

Björnson, Björnstjerne (1832-1910), Norwegian dramatist, novelist, and poet, b. in Osterdal, Norway, was the son of the pastor of Kvikne. When he was 6 years old his family moved to the beautiful dist. of Romsdal, where most of his childhood was spent. In 1852 he graduated at the univ. of Christiania, where he took to journalism, chiefly dramatic criticism, but soon embarked on his independent literary career. His series of pastoral novels, some of the most exquisite pictures of peasant life in modern fiction, began with *Synnöve Solbakken*, 1857, and include *Arne*, 1858; *En Glad Gut* (A Happy Boy), 1860; and *Fiskerjenten* (Fisher Maiden), 1868. In 1897 he was made director of the Bergen theatre, where Ibsen had been stage poet and had produced some of his earlier plays. B.'s dramatic work began with his national saga plays, the earliest being *Mellem Slagene* (Between the Battles), produced 1857; and *Halte-Hulda* (Lame Hulda), 1858. In 1860 he was given a travelling

allowance by the gov., and spent from 1860-63 in Italy and on the Continent. *Kong Sverre*, 1861; the great trilogy, *Sigurd Stenbe* (Sigurd the Bastard), pub. 1862, produced 1865; *Sigurd Jorsalfar* (the Crusader), not pub. till 1872, complete his heroic and historical dramas. On his return to Norway he became manager of the theatre at Christiania. His literary reputation was now estab. His tragedy, *Maria Stuart i Skotland*, 1864, and a comedy, *De Nygifte* (The Newly Married Couple), 1865, were produced under his management. At this period he threw himself into politics as a strong reformer and radical. From 1868 to 1874 he was constantly travelling, not only in Norway, but on the Continent, speaking and lecturing and spreading his views not only on politics, but on literature, art, and religion. His magnificent voice and noble presence helped his great oratorical powers. In 1870 he pub. his collection of poems, *Digte af Sange* (new ed., 1880), and his epic, *Arnliot Gelline*. His political enthusiasm kept him for a time from literature. From 1873 to 1876 he lived abroad, and did not return to Norway till 1877. His third literary period may be dated from this time; it is marked by a complete change, and B. takes his place with Ibsen as one of the pioneers of modern drama with a direct appeal to life as it is actually lived, and with a close insight into the motives of everyday action. These plays were at first unsuccessful, though they excited much controversy; they include *En Fallit* (A Bankruptcy), 1874; *Redaktören* (The Editor), 1874; *Kongen* (The King), 1877; *Leonarda*, 1879; *Det ny System* (The New System), 1879; *En Hanske* (A Gauntlet), 1883; and *Geografi og Kærlighed* (Geography and Love), 1885. His symbolic play, *Over Ævne* (Beyond our Powers), was pub. 1883, but not produced till 1899. In the political crisis over the royal veto he supported Sverdrup with his old vehemence, and for a time he lived abroad and wrote the analytical and psychological novels, dealing with heredity and education, *Det Flager, etc.* (Flags are Flying), 1884; *Paa Gud's Veje* (In God's Way), 1890. A collection of powerful stories (*Nye Fortællinger*) was pub. in 1894. His later work includes the plays: *Paul Lange*, 1898; *Laboremus*, 1901; *Paa Størhove*, 1904; *Dagbladet*, 1904; *Naar den ny Vin blomstrer*, 1909. He received the Nobel prize for literature in 1903. Though an ardent nationalist he adopted a moderate policy during the rupture between Norway and Sweden, and opposed the proposal of a new Norwegian language based on the peasant dialects, the *Bonde-Maal*. See C. Collin, *Björnson*, 1903; W. Payne, *Life*, 1910; E. Gosse, *The Novels* (13 trans. and memoir), 1895; G. Brandes, *Ibsen and Björnson*, 1899. There is a short memoir and full bibliography by R. F. Sharp in *Three Comedies by Björnson* (Everyman's Library). His poems and songs were trans. into Eng. by A. Hubbell Palmer (1915).

Björnstjerna, Magnus Frederik, Count (1779-1847), Swedish diplomatist, b. at

Dresden; he joined the army and fought against the Fr. at the battle of Leipzig, and later served in Holstein. In 1914 he signed the treaty uniting Sweden and Norway. He was minister plenipotentiary to Great Britain, 1828-46. He wrote books on *Hindu Theogony*, 1843, and on the Brit. rule in India.

Black, Adam (1784-1874), Scottish publisher, b. in Edinburgh. He learnt the business of bookselling in London and Edinburgh, and started for himself in Edinburgh, where by 1826 he had, with his nephew Charles Black, successfully estab. the still existing publishing house of A. and C. Black. He took part in municipal politics, and was twice lord provost of Edinburgh, and was member for the city from 1856 to 1865 as a Liberal. He retired from business in 1865. In 1895 the firm was removed to London. The chief events of the hist. of the house were the issue of the 7th, 8th, and 9th eds. of the *Ency. Brit.*, the copyright of which had been purchased from Constable in 1827; the purchase from R. Cadell of the copyright of Scott's *Waverley Novels* in 1851, and of De Quincey's works in 1861; the purchase in 1896 of the copyright and right of continuation of *Who's Who*, first pub. by Alfred Bailey in 1849; and in 1900 the house acquired the copyright of *Men and Women of the Time* (founded in 1852), whose title thereafter became the sub-title of *Who's Who*. See memoir by A. Nicholson, 2nd ed., 1885.

Black, Jeremiah Sullivan (1810-83), Amer. statesman, b. at Stony Creek, Pa.; self-educated he soon became foremost at the Bar, and in 1857 was attorney-general in Buchanan's Cabinet. He successfully contested the validity of the Californian land claims, opposed the Congressional plan for reconstructing the Confederate states after the Civil war, and was counsel for President A. Johnson and W. W. Belknap on their impeachments. There is a life by his son, C. F. Black (1885).

Black, Joseph (1728-99), Scottish physicist, b. in France. After an education in Belfast, he studied medicine and chem. under Prof. William Cullen, whom he succeeded in 1756 as prof. of anatomy and chem., a position he later exchanged for the chair of medicine. In 1766 he became prof. of chem. at Edinburgh, where he d.

Black, William (1841-98), Scottish novelist, b. in Glasgow. He studied art with little success, and became a journalist, writing for the *Morning Star*, for which he acted as war correspondent during the Austrian and Prussian war of 1866; he then joined the staff of the *Daily News*. His first novels made no mark, but *In Silk Attire*, 1869, and *Kilmeny*, 1870, were more successful; his popularity, however, as a novelist, which lasted till his death, may be dated from *A Daughter of Helth*, 1871. B.'s special power was that of vivid description of Scottish scenery and outdoor life. His long series of novels includes *The Strange Adventures of a Phaeton*, 1872; *A Princess of Thule*, 1874; *MacLeod of Dare*, 1878;

White Wings, 1880; *Shandon Bells*, 1883; *White Heather*, 1885; *In Far Lochaber*, 1888; *Highland Cousins*, 1894; *Wild Eelin*, 1898. A lighthouse was built to his memory at Duart Point, sound of mull, in 1901. See life by Wemyss Reid, 1902.

Black Acts, popular name for various enactments: (1) The statutes of the Scottish Parliament, 1424-1594, which were printed in black letter. (2) The Scottish Acts of 1584, passed at the instigation of James VI., to suppress Presbyterianism and re-establish Episcopacy. These acts declared the supremacy of the king, overthrew the jurisdiction of the kirk; the functions of the presbyteries and assembly were handed over to the bishops; it was made treason to attack episcopacy. The acts were abrogated in 1592. (3) An Act of 1722, directed against gangs of men with blackened faces who were responsible for an outbreak of robberies. The Act, which made it a felony to blacken the face, was repealed in 1827.

Black Agnes, sobriquet given on account of her complexion to Agnes, countess of March, who defended Dunbar Castle against Montague, earl of Salisbury, in 1338, for 5 months, until, reinforcements having reached her by sea, the Eng. withdrew.

Black and Tan. The popular name of a force of police, formed by the Brit. Gov. in 1920 for service in Ireland during the rebellion of that time. Their presence occasioned increased violence and disorder on the part of the Irish, and this led to regrettable reprisals, and they were withdrawn on peace being declared in 1922. They were a branch of the Royal Irish Constabulary, and their uniform was a black hat and armband and khaki tunic.

Black-and-Tan Terrier, type of terrier. The black-and-tan dog was the original type from which have sprung the Welsh, Irish, and Alfredale terriers. We are told that the earliest recognisable B.-and-T. terrier is portrayed in an illuminated MS. book of hours of the fifteenth century. Later, they were known as Eng. terriers, and also as Manchester terriers; but there have been many cross breeds. It is generally accepted that the pure breed had its origin in and around Manchester, as it is so often known as the Manchester Terrier. Dog shows have, however, conducted to the refinement of the original breed down to the quality of a mere pet, though it is still useful as a rat catcher, besides having great intelligence. The head should be long, flat, narrow, and wedge-shaped; eyes, very small, sparkling, and dark; nose, black; erect or semi-erect ears; neck long, and tapering from the shoulders to the head, with sloping shoulders; narrow and deep chest; legs quite straight; feet more inclined to be cat- than hare-footed; tail thick where it joins the body and tapering to a point; and smooth, short, and glossy coat. In colour the dog should be jet black and rich mahogany tan on the head; the muzzle should be tanned to the nose, which, with the nasal bone, is jet black; forelegs should be half tanned, and the hind legs tanned on the inside, but not

on the outside. The toy breed, the only B. and T. T. recognised by the Kennel Club, retains much of the quality of the It. greyhound. A dog so small has been known as could stand on the palm of one's hand. The usual weights are: for the large or normal breed, 16-20 lb.; for toy breeds, not exceeding 7 lb.

Black and White, an illustrated weekly, founded in 1891 by Charles Norris Williamson. Beginning as an artistic journal, it became one of the pioneers in photographic illustration of current events, and pub. both drawings and photographs dealing with news and interesting personalities. The literary matter included short illustrated stories and articles on politics, society, sport, and professional subjects. The last number appeared in Jan. 6, 1912. The editors have included Mr. J. Nichol Dunn and Dr. McKew, while among the literary contributors were Swinburne, Bret Harte, Kipling, Stevenson, and Barry Pain. Herkomer, G. F. Watts, Max Cowper, and Linley Sambourne contributed on the artistic side.

Black Ape (*Cynopithecus niger*), baboon-like species of monkey found in Celebes. Its hair and skin are coal-black, and it has a crest on the head.

Black Art, see MAGIC.

Black Assizes, the name given to certain assizes at which a virulent epidemic of gaol fever, or typhus, broke out; more particularly to one which occurred at the close of the Oxford assizes, July 1577, of which more than 300 persons d., including the high sheriff and many officials of the court.



BLACKBERRY

Black-band Ironstone, in mining and metallurgy, an iron-ore siderite, found chiefly in Scotland; it is a carbonate of iron, mixed with a large proportion of coal or bituminous matter. It is of intensely black colour, and was highly prized for its ease in smelting.

Black Bass, a centrarchoid fish, belonging to the sunfish family, of the genus

Micropterus. It is akin to the perch, has an oblong body, with dorsal fin low and anal fin shorter than the soft part of the dorsal. It is essentially a N. Amer. fish, and the 2 species are *M. salmonides*, which is found from Canada to the Great Lakes and as far S. as Texas; and the small-mouthed *M. dolomieu*, which is found from the Great Lakes to Arkansas and N. and S. Carolina. Other names given to one or both species are trout, in the S., and in the N., chub, Welshman, and jumper.

Black Bear Cat, see BINTURONG.

Black Beetle, see BLATTIDAE.

Blackberry (*Rubus fruticosus*), species of Rosaceae which has many varieties in Britain. The plant is a hook-climber, and frequently roots where the branches touch the earth, thus forming a new plant. The fruit grows on a flattened thalamus with a conical protuberance on which are borne many one-seeded drupelets; it therefore consists of an eterio of drupes, and is not properly a berry. It is also commonly called bramble. (See illustration, p. 373.)

Blackbird (*Turdus merula*), name of a common bird, found all over Europe, in Asia, and N. Africa. It has been acclimatised in New Zealand. In Great Britain it is a resident, but large numbers of emigrants also come in the autumn. The male is entirely black, with bright yellow beak, taking a deeper and more vivid colour in the breeding season. The female is of a dusky brown, fading to a paler hue beneath. The nest, built in thickets or creeper-clad trees, is of grass and moss, and plastered with mud; the eggs, 4 to 6 in number, are blue with brown specks. The B. is a fine song-bird, its notes being clear and loud, but it has not the range or modulations of the thrush. Destructive to fruit and seeds, it also feeds largely on worms, grubs, snails, and is useful in keeping down garden pests. Its old Eng. name 'ousel,' appears in the name of a variant, the ring-ousel, so called from its white neck marks. It is a large moorland B., a migrant from Africa. (See RING OUZEL.)

Blackbirds, Field of, or Kosovo Polje, a small plain in Yugoslavia, lying to the S. of Pristina. It is famous as the scene of 2 great battles: (1) The victory of Sultan Murad over the Serbians, whose emperor, Lazar, was killed, and whose empire was overthrown, in 1389. (2) The victory of Sultan Murad II. and George Brancovics of Serbia over John Hunyadi of Hungary in 1448.

Black Book: (1) Of the Admiralty contains, under the title of 'Laws of Oléron,' the earliest collection of 'sea laws,' dating back to the fourteenth century. It was first ed. by Sir Travers Twiss, 1871-76, and embraces the various maritime laws and customs on which the judge in the Admiralty Court bases his decisions. (2) Of the Exchequer, is a meagre record of the royal household in Henry II.'s reign. (3) Of the Household, is a similar record to (2), compiled in Edward IV.'s reign. (4) The term B. B. was also applied to the reports, the accusations of which are for

the most part unfounded or extravagant, presented to Parliament in 1536, upon which were based the laws for the dissolution of the monasteries.

Black-boy, see GRASS-TREE.

Black Bryony, see TAMUS.

Black Buck, Indian antelope, *Antelope cervicapra*. Has large ringed spiral horns. Blackish brown coat, white beneath.

Black Bulb Thermometer, a maximum thermometer, of which the bulb and part of the stem are coated with lampblack, and which is enclosed in a vacuum cylinder. It thus provides a delicate instrument for the measurement of temp. by radiation only, and if placed in open sunshine and compared with the readings of a delicate thermometer in the shade, gives an indication of the difference of temp. due to direct solar radiation.

Blackburn, municipal co., and parl. bor. of Lancashire, England, 24½ m. N.N.W. of Manchester, 9 m. E. of Preston. It lies on the brink of the Ribbles Valley, and on the first eminence between the W. coast and the Pennines, the surrounding hills being 700 to 900 ft. high. B. is the prin. cotton-weaving centre of Lancashire, and, despite the general downward trend of the industry during the last 25 years, it still maintains an important position in the textile world. It is true that whilst cotton weaving was formerly the staple trade of B. the number of cotton mills now operative represents only one-half of the number in 1920; but many persons redundant to the cotton trade have found employment in the manuf. of slippers, electric cookers, refrigerators, fancy leather goods, and in dye-works, and the making up of cotton garments. The manuf. of textile machinery and utensils, and other types of engineering still are an important part of the industrial activity of the tn. There are good rail and road facilities to all parts. James Hargreaves, the inventor of the spinning jenny, was a native of B., and his employer, Robert Peel, grandfather of the Prime Minister, Sir Robert Peel, greatly fostered the growth of the cotton industry. Viscount Morley was another famous native of B. The tn. was incorporated in 1851, and made a co. bor. in 1888. There are fine parks, the prin. being Queen's Park, Corporation Park, and Roe Lee Park. St. Mary's Church, a very anct. foundation, although the present building dates only from 1826, forms the nave of the cathedral of the B. diocese, which was created in 1927, and is a fine representative of modern Gothic. Among other notable public buildings are the fine public halls in Northgate, the new sessions house and police courts adjoining, and the public library, all in close proximity to the tn. hall, a noble building in the It. Renaissance style. War damage in B. was negligible—one shop and some outbuildings. Historical places near by are Hoghton Tower, Clitheroe Castle, Whalley Abbey, and Stonyhurst College at Hurst Green. It returns 2 members to Parliament. Pop. (estimated 1944) 102,630.

Blackburn, Colin, Baron (1813-96).

Scottish judge, b. in Selkirk. In 1838 he was called to the Bar, and he became a judge in the court of queen's bench in 1859. In 1876 he was made a life peer and a lord of appeal. His *Contract of Sales* was pub. in 1845.

Blackburne, Francis (1782-1867), lord chancellor of Ireland, b. in co. Meath; educated at Trinity College, Dublin; called to the Eng. Bar, 1805, and to the Irish Bar, 1822, when he was employed in repressing disorder in Limerick under the Insurrection Act. He was attorney-general for Ireland, 1830 and 1841; master of the rolls, 1842; chief justice of the queen's bench, 1846 (in this capacity he presided at the trial of Smith O'Brien); and lord chancellor, 1852; in 1856 he was made a lord justice of appeal. In 1866 he again became lord chancellor.

Blackburne, Lancelot (1658-1743), Eng. bishop. He was educated at Westminster School, afterwards entering Christ Church, Oxford, in 1676. His rise in the church was due originally to Bishop Trelawney. He became bishop of Exeter in 1717, and archbishop of York in 1724. His disposition was gay, and he seems to have been noted as a wit. A certain freedom from the restraint usually observed by the clergy caused many fables to be circulated regarding his 'licentiousness.'

Blackburn's Pendulum, see under PENDULUM.

Black Cap, cap which is worn by the judges of Great Britain when sentence of death is to be delivered.

Blackcap (*Sylvia atricapilla*), bird of the family Sylviinae or Warblers, a sub-family of the thrushes. The general colour of the bird is an ashen-grey, turning to an olive-brown above and pale or whitish-grey below. The cock bird alone has the jet-black cap which gives the name, the hen's head-covering being brown. It is one of the sweetest of song-birds. It leaves Great Britain at the end of summer.

Black-capped Titmouse (*Parus atricapillus*), bird of the family Paridae, native of N. America, where it is known as the chickadee. It is small but strongly built, has a sharp black bill, and in colour varies between black, white, grey, and yellowish-grey. The Brit. marsh titmouse (*P. palustris*), is sometimes given this name.

Blackcock and **Heathcock**, names applied to both sexes of the black grouse, *Tetrao* or *Lyrurus tetrix*, though greyhen is a more suitable designation of the female. They are allied to the quail, partridge, and capercaillie, and are common in N. Scotland. The food consists of buds, young shoots, berries, and insects. The plumage of the male is very beautiful, the tail is lyrate, and above the eyes is a piece of bright red skin which becomes more intense during the pairing season. The bird is polygamous, and in the spring the males attract the females by curious crowsings and noises as of the whetting of a scythe.

Black Cocktail, see DEVIL'S COACH-HORSE.

Black Country, The, term used to denote

the mining and manufacturing dist. situated partly in the S. of Staffordshire and partly in Warwickshire. It is so named from the numerous factories and coal mines around. The manuf. of iron in all its branches is carried on, and the chief smelting centres are Wolverhampton, Dudley, Wednesbury, W. Bromwich, Walsall, Bilston, and Tipton, while Birmingham is the central market.

Black Death, name of a pestilence which was pandemic in the fourteenth century. Though there were outbreaks in 1361-62 and 1369, its worst visitation was in 1348. Beginning in China—it was probably a form of the oriental plague—it reached the coast tns. of Italy through Constantinople, and thence spread all over Europe. Its symptoms were blood-spitting, putrid pulmonary inflammation, and black spots and tumours on thighs and arms. The victim usually succumbed a few days after the appearance of the boils. The death-rate, though phenomenal, cannot be estimated, there being no scientific record of births and deaths. It is believed that 37,000,000 perished in the E., whilst in England alone something like 1,500,000, that is, between one-third and one-half of the entire pop., were mortally affected. It is said that the advent of the contagion was preceded by ominous portents—famine, drought, earthquake, dense fog, and seasonal disturbance. As in the plague at Athens, the ravages of the scourge led to outbursts of religious frenzy, but more often to demoralisation and debauchery. Mothers deserted their stricken children, and the sick were left to die and rot in public highways. The enormous mortality is a landmark in Eng. economic hist. Laws were futile to interfere with the rapid rise in wages, engendered by the scarcity of labour, whilst Wat Tyler's rebellion was only one outward indication of the far-reaching and inevitable changes that resulted in the relations between landlord and peasant.

Black Eagle, Order of the, an order instituted by the elector of Brandenburg on the occasion of his coronation as Frederick I. of Prussia, in 1701. Its badge was a blue Maltese cross, and in the angles was a crowned black eagle. It was conferred only on persons of noble birth.

Black Earth (Russian *tschernozom*), kind of loess, forming a rich black soil, containing a proportion of humus, found stretching over a vast area of Russia, from the Carpathians to the Ural Mts., and occupying some 150,000,000 ac. Its depth varies from a few ft. to 7 or 8 ft. It is fertile, bearing grain crops for many consecutive years without manure.

Blackfeet, Eng. name given to a tribe and to a confederacy of N. Amer. Indians, either as a translation of a native word, or, according to tradition, from the smoke-blackened moccasins of the tribe first met by the whites. The native name of the tribe is *Siksika*. The confederacy was formed of the Piegans, the Kinos or Bloods, and the *Siksika* or B. proper. All are of Algonquin stock. The confederacy was once the strongest Indian power in

the N.W., and extended from the Rocky Mts. to the head waters of the Missouri, and into what is now Alberta and Saskatchewan. At the present day the tribes number about 5600, the Piegiens about 3300 in B. reservation in Montana, 400 in Alberta; Bloods, 1200, chiefly in Alberta; and Siksika or B. proper, some 700, chiefly in Alberta. An epidemic of smallpox decimated the tribes in the middle of the nineteenth century.



A YOUNG BLACKFEET INDIAN

Black Fish, see **TAUTOG**.

Black fish: (1) *Dallia pectoralis*, fish found in Alaska, characterised by a very thin skeleton and by the dorsal fin being far back—in the latter way resembling a pike. The scales are very small and embedded in the skin. It is a fresh-water fish, and is used for food by the people in some parts of Alaska. (2) *Centrolophus niger*, fish of the order Stromateidae. Something like a perch, it has small cycloid scales which are deciduous. The species of this family are widely distributed, and this particular species has been found on the coasts of England. The name is also given to other varieties of dark-coloured fishes, particularly the tautog (q.v.).

Black Flux, a mixture used in the reducing of certain ores. It consists of powdered carbon and potassium carbonate, and is usually prepared by heating

crude cream of tartar or argol with half its weight of nitre.

Black Forest (Ger. Schwarzwald), a thickly wooded mountainous dist. of S.W. Germany, running on the E. side of the Rhine Valley, which bounds it from Basel on the S. It extends to the Neckar Valley on the N. Two-thirds of the dist. lies in Baden, on the W., the remainder in Württemberg, on the E. Its area is about 1800 sq. m., its length 100 m., greatest breadth 36 m. The S. portion is the wildest and most mountainous, containing the highest peaks, Feldberg, 4898 ft.; Herzogenhorn, 4600 ft.; Blössling, 4260 ft. The Kaiserstuhl (Emperor's Chair) is an independent group of volcanic origin, 10 m. long, 5 m. broad; the highest point being 1760 ft. The valley of the Kinzig divides the S. from the lower N. portion. The forests of the dist. consist mainly of spruce, silver fir, Scotch pine, on the higher slopes, with birches, beech, and oak below. The former large trade in logs floated down the Rhine decreased when industries were set up in the dist. dependent on the supply of wood locally for the manuf. of wood-pulp, making of toys, wooden clocks, musical instruments, etc. There are many mineral springs, those of Baden-Baden and Wildbad being the best known. The prin. tns., Freiburg, Rastatt, Offenburg, Lahr, lie along the W. border. As a touring resort the B. F. has long been famous for its beautiful valleys, picturesque wooded heights, and mountain and forest lakes.

Black Friars, see **DOMINIC**.

Blackfriars Bridge, a bridge over the Thames, London, England, next below Waterloo Bridge, and above Southwark Bridge, Blackfriars Bridge and Blackfriars Railway Bridge intervening between the two last. The first B. B. was begun in 1760, completed in 1770 and removed in 1860. The present was begun in 1865, and opened in 1869, from designs by J. Cubitt. It was widened for the London County Council electric tramway along the Embankment to Westminster Bridge in 1907-9. The name commemorates the monastery of the Blackfriars or Dominicans on the N. side of the Thames at this point.

Black Friday, Dec. 6, 1745, the day when the news that the pretender had arrived at Derby was known in London. In the U.S.A. this term is applied to Sept. 24, 1869. For some time during the summer of that year the balance of trade had been going against the U.S.A. and gold was being drained out of the country. The U.S.A. Treasury therefore discontinued the sale of gold in its possession. Two Wall Street speculators, Jay Gould and James Fiske, conceived the idea of cornering the visible gold supply in the U.S.A. They were so successful that they pushed it up to a very high price. The Gov. ended their grip on things when it sent gold into the open stock market in large quantities to buy up U.S.A. bonds. A big stock exchange smash resulted on the date mentioned. There was another B. F. on the New York stock exchange on Sept. 19, 1873. In England, May 11

1866, the date of suspension of payments by Overend, Gurney & Co., bankers, is also known as B. F.

Blackguard, term used during the sixteenth and seventeenth centuries. It designated certain soldiers and camp followers. It also meant the lowest servants of a nobleman's household, who performed the dirtiest and blackest work in the kitchens.

Black Hand, a criminal society which existed among the Its. in New York for purposes of blackmail and extortion. For sev. years the Black Handers escaped detection owing to the fact that they chose their victims from among the poorer inhabs. of the It. quarter of New York, who were too intimidated to take action. B. H.'s revenge for non-compliance or exposure on the part of a victim consisted in stabbing, shooting, incendiarism, and child-kidnapping. It was not until May 1914 that the police were afforded sufficient clues to effect an arrest of the B. H. gang on a large scale. Soon after this the gang was entirely dispersed. The Black Handers signed their letters of threat with the picture of a black hand clutching a dagger.

Black Hawk, Amer. Indian chief who took part in the war of 1812 against the Amers. He was finally defeated in the Black Hawk war, 1832, after many times refusing to agree to treaties made to the effect that his tribes should relinquish their lands. After being released from Fortross Monroe, he settled in Iowa, where he d.

Black-headed Thistle-finch, see SISKIN.

Blackheath, common and residential dist. belonging to the metropolitan bor. of Lewisham, in the S.E. of London, England. The common, once about 260 ac. in extent, but now reduced to 70 ac. by building encroachments, lies S. of Greenwich Park. On the S. of the common is Morden's College, founded by Sir John Morden at the end of the sixteenth century as an almshouse or pensionary for Turkey merchants. The heath was the scene of the rebellious gatherings of Wat Tyler (1381) and Jack Cade (1450). The Cornish rebellion led by Lord Audley was crushed in a battle on B. in 1497, and here the people met Henry V. after Agincourt and the army Charles II. after the Restoration. Golf was certainly played on B. common earlier than elsewhere in England, tradition dating its introduction to 1608 and to James I. Rectory Field on B. is the ground of the Blackheath Rugby Football Club.

Black Hills, mt. system S.W. of S. Dakota, and N.E. of Wyoming, U.S.A. The area covered by the hills is about 9000 sq. m., and the highest point, Harney Peak, attains an altitude of 7403 ft. Large forests of pine and other coniferous trees cover their slopes. Among the minerals deposited there are gold, carboniferous limestone of good quality, and lead. Two branches of the R. Cheyenne encompass the area. The fertility of the valleys renders dairy produce most successful.

Black Hellebore, see CHRISTMAS ROSE.

Black Hole of Calcutta, popular name given to an atrocity perpetrated by Suraj-ud-Dowlah, nawab of Bengal, during the Seven Years' war. When he sacked Calcutta and seized Fort William in 1756, most of the Eng. residents escaped, but some few, under the command of Holwell, remained, and were obliged to surrender themselves to the native prince. At his command they were all confined in a guard chamber, 18 ft. long, with only 2 small windows high up. It was a stifling summer's night, and next morning 23 alone of the 146 prisoners staggered out, or were carried out, alive. In 1902 Lord Curzon dedicated a monument in memory of the incident, the site of which is now marked by a marble slab. An account of this act of barbarism, which was avenged by the victory at Plassey in 1757, will be found in Lord Macaulay's essay on Clive. On July 23, 1940, Mr. Fazl-ul-Huq, premier of Bengal, announced that the provincial gov. had decided on the removal of the Holwell monument commemorating the tragedy of 1756. The original obelisk (erected by Holwell, the prin. survivor, and afterwards governor of Fort William) was removed in 1821.

Blackie, John Stuart (1809-95), Scottish writer and scholar, b. in Glasgow. Studied at the Marischal College, Aberdeen, Edinburgh Univ., 1825-26, and in Germany at Berlin and Göttingen. In 1834 he was admitted to the Faculty of Advocates. He was prof. of humanity (Lat.) at Aberdeen from 1841 to 1852, when he became prof. of Gk. at Edinburgh Univ., a chair he held till 1882. He took a prominent part in educational reform and the remodelling of Scottish univs. His literary output was great, and he was also instrumental in the founding of a professorship of Celtic at Edinburgh Univ. The grievances of the Highland crofters, and all questions of Scottish nationality and customs, drew his enthusiastic support. In politics he was an independent Radical. His writings include translations of *Faust*, 1834; *Æschylus*, 1850; and the *Iliad*, 1866; *Homer and the Iliad*, 1866; *Four Phases of Morals*, 1871; *Horæ Hellenicæ*, 1874; *Language and Literature of the Scottish Highlands*, 1876; *Scottish Highlanders and the Land Laws*, 1885; *Life of Burns*, 1888; *Scottish Song*, 1889; *Christianity and the Ideal of Humanity*, 1893; and sev. vols. of verse, original and translations. See A. M. Stoddart, J. S. Blackie, 1895.

Blacking, a mixture applied to leather, especially that of boots and shoes, in order to produce a polished black surface. It consists of powdered bone-black, raw sugar or molasses, sulphuric acid, and vinegar. B. is either made up in a semi-liquid form or more usually now in the form of a paste. For harness leather the chief foundation is beeswax mixed with turpentine, ivory black, and copal varnish.

Blacking Plant (*Hibiscus rosa sinensis*), shrub or small tree of the mallow family (Malvaceæ), native of China; a showy plant in hothouses, having single or double red and yellow flowers. The red,

when bruised, turn black, and are used for colouring eyebrows and blacking shoes.

Black Isle, peninsula on the E. of Ross and Cromarty, Scotland; it lies between Cromarty Firth, N., and Beaulie and Inverness Firths, S. and S.E.; on the N.E. and E. it projects into Moray Firth. It has a coast-line of 52 m. The Highland R. runs from Muir of Ord to Fortrose. The prin. tns. are Cromarty and Fortrose. The soil is fertile: the highest point of the Mulbuie ridge is 838 ft.

Black-lead, **Plumbago**, or **Graphite**, mineral crystallising in the rhombohedral system. It is usually found in six-sided tabular crystals, black or dark steel-grey in colour, greasy to the touch, and with a hardness of 1. Chemically it consists of carbon with impurities of iron sesquioxide and clay. It resists chemical change more than other forms of carbon, fusing only in the electric arc, and is unaltered by most acids. It is a good conductor of electricity, and is so soft that it marks anything it touches; hence its use for the manuf. of writing pencils and as a polish for ironwork. Its greasy nature makes it an excellent dry lubricant for the breech-locks of rifles, etc., where a volatile lubricant is not desirable. Graphite is found in beds and embedded masses, scales, or leaflets in granite, gneiss, mica schist, and crystalline limestone. It occurs amongst slate in Cumberland and gneiss in Scotland; quantities are exported from Ceylon, and that found at Irkutsk in E. Siberia is probably the best in the world. America is supplied by beds at Ticonderoga in N. Carolina, and at Sonora in Mexico. It is artificially produced in iron furnaces and is produced electrically from anthracite for the manuf. of black-lead pencils.

Black Letter, name given to type used in the earliest printed books, sometimes as equivalent term to 'Gothic,' sometimes confined to the early Eng. types used by Caxton, also styled 'English type.' The words following are printed in Black letter, which is used in ornamental printing. Early types were copied from the handwriting in use at the time, and thus the Ger. script was adopted. Gothic or B. L. was used extensively all over Europe in various forms and modifications. It was succeeded by the It. or Rom. type, founded on the purer and simpler It. or Rom. script of the twelfth century, but it long remained in use for printing bibles, law-books, proclamations, and the like. B. L., or rather a modification, is still the national Ger. type of printing, but there is a growing movement to print more books in Germany in Rom. type. In old church calendars the greater festivals and saints' days were marked by being printed in red ('red-letter days'), the lesser days were printed in black ('black-letter days'), hence the term came to be applied to unlucky, inauspicious days.

Black List: (1) The name given to a printed list issued to subscribers by various trade protection societies, which gives the names of those whose credit is bad, thus serving as a warning against allowing them to incur fresh debts. Such

lists are made up from judicial and other sources, and include the records of bankruptcies, arrangements or compositions with creditors, unsatisfied judgments for debts, bills of sale, liquidations, warrants of attorney, dissolution of partnership, and all matters of public record that affect the financial standing of the parties named in the list. (2) The Licensing Act of 1902 provided that when a person had been convicted of the offence of habitual drunkenness, he should not for 3 years obtain liquor from any publican or licensed club, and that the police should keep a list, popularly styled the B. L., of such convictions in the area of the court where such convictions were recorded. This regulation became a dead letter.

Blacklock, Thomas (1721-91), Scottish poet, b. at Annan, Dumfriesshire, of humble parentage. He lost his sight through small-pox when 6 months old. Some early poems first pub. in 1746, led to his education at Edinburgh, where he studied divinity. He was an early admirer and friend of Burns, and persuaded him to abandon his leaving Scotland for the W. Indies. He supported himself by taking pupils in Edinburgh. See H. Mackenzie's ed. of poems with life, 1793.

Blackmail, legal term with 3 distinct meanings: (1) It once referred to rent paid in labour, corn, or baser metal (*reditus nigri*), so called to distinguish it from silver money (*mailles blanches*). (2) In the border country between England and Scotland it meant tribute in coin or cattle, extorted from farmers by moss-troopers, as a guarantee of immunity from raids. Though this custom was made a felony in 1601, it continued till the union of the 2 countries in 1707. (3) Now applied generally to the crime of extorting money or goods on threat of libel, exposure, or prosecution.

Black Monday, Easter Monday 1360, when a violent storm occurred. Shakespeare mentions the event in *Merchant of Venice*, II. v. 25.

Blackmore, Sir Richard (c. 1650-1729), Eng. physician and author, b. at Corsham, Wilts.; was first a schoolmaster, then studied medicine and practised in London. Supporting the revolution he was knighted 1697, and became court physician to William III. and to Queen Anne. He was a writer of dull and turgid epics, which merit the ridicule of Pope's *Dunciad*, though they were praised by Addison, and one was thought worthy by Johnson of appearing in a publisher's collection of the Brit. poets, to which Johnson supplied the lives. Of his 6 epics, in 60 books, *Creation*, 1712, expounding Locke's philosophy as against the infidelity of Hobbes, was the most praised. Others were *Prince Arthur*, *Redemption*, and *Alfred*, all of which are utterly forgotten.

Blackmore, Richard Doddridge (1825-1900), Eng. novelist, b. at Longworth, Berkshire; educated at Blundell's School, Tiverton, Devonshire, and Exeter College, Oxford. He was called to the Bar and practised till a breakdown in health. He

then combined literary work and market-gardening at Teddington. His poems were not successful, but his first novel, *Clara Vaughan*, 1864, was at once welcomed. In 1869 was pub. his best work, *Lorna Doone*, a romantic story set in the scenery of Exmoor, which gained the author a lasting popularity. His other novels include: *Cradock Nowell*, 1866; *The Maid of Sker*, 1872; *Cripps the Carrier*, 1876; *Christowell*, 1880; *Springhaven*, 1887; *Perlycross*, 1894; *Tales from the Telling House*, 1896; *Dariel*, 1897.

Black Mountains, group of mts. W. of N. Carolina, U.S.A. Most of the area is situated in the co. of Yancey. Of the Appalachian system they are the highest mts. (2) stretch of mt. country in S.E. Wales, of which the Brecon Beacons and the Fforest Fawr form the central section.

Blackness, vil. of the co. of Linlithgow, Scotland, on the firth of Forth.

Blackpool, municipal, co., and parl. bor. of Lancashire, England, situated on the W. coast, 46 m. N. of Liverpool and 8 m. S.W. of Fleetwood, on the Irish Sea, between the mouth of the Ribble and Morecambe Bay. It is one of the most popular holiday resorts in the world—catering for 7,000,000 visitors in the course of a season. Its magnificent promenade stretches for 7 m. along the coast, and contains sunken gardens, waterways, colonnades, sun-lounges, and cliff walks, whilst the whole length is fringed by sands, free from shingle, and practically a m. in width at low water. The gradually sloping beach makes for safe sea-bathing. The tn. is dotted with many tennis courts, bowling and putting greens, and, in the largest of the parks—Stanley Park—there are 32 tennis courts, 6 bowling greens, 2 putting greens, a golf course, and a 26-ac. boating lake. The tn.'s indoor entertainments include a permanent circus, 4 theatres, an ice drome, 18 cinemas, 7 ballrooms, the one in the Winter Gardens being the largest in Europe, and home of the International Dance Festival. The Tower, B.'s landmark, 520 ft. high, houses a menagerie, aquarium, aviary, roof-gardens, ballroom, etc. The Derby Baths, which were completed in 1939 (accommodation for 5000 spectators and 3000 bathers), and the open-air swimming pool at South Shore are amongst the finest in the world. There are over 5000 hotels, private hotels, and boarding and apartment houses. B. which owes its name to a peaty-coloured pool, now covered in, at the S. side of the tn. was made a parl. bor. in 1918, including the bor. of Lytham St. Anne's. The same year the urban dist. of Bispham with Norbeck and part of Carleton were incorporated in it. The Princess Parade was opened by H.R.H. Princess Louise in 1912, and the Opera House rebuilt the same year. It returns 2 members to Parliament. Pop. (estimated 1946) 145,000.

Black Prince, the second Eng. iron-clad (9210 tons, 13.6 knots, 40 guns, heaviest 68-pounders), was launched in 1861. Another B. P., armoured cruiser (13,550 tons, 22.3 knots), was launched in

1904 by the Thames Shipbuilding Co. The first B. P. in the Eng. Navy served under Prince Rupert, and was driven ashore by Blake.

Black Prince, The (1330-76), name given to Edward, prince of Wales, eldest son of Edward III. He was b. at Woodstock, June 15; made earl of Chester, 1337, duke of Cornwall, 1337, created prince of Wales, 1343. His military career began with the Fr. campaign of 1346, and he distinguished himself at Crécy and at the siege of Calais. He was one of the original knights of the Garter and was present at the naval battle off Winchelsea with the Spaniards in 1350. In 1355, as lieutenant for his father in Gascony, he reconquered much territory, and made many marauding expeditions, and 1356 won the victory of Poitiers, showing himself a master of tactics, and returning in triumph to London with King John a prisoner in his train. He took part in the expedition to France in 1359 which ended in the peace of Calais, 1360. In 1361 he married Joan, countess of Kent, his cousin, and in 1362 was made duke of Aquitaine, where he ruled as a vassal sovereign. In 1367 he lent his aid to Pedro the Cruel, deposed king of Castile, led his army into Spain, and defeated the usurper Henry of Trastamare and Bertrand du Guesclin at Najera. The expedition ruined him in health and resources, and on his return began the revolt of his vassal barons. He was too ill to suppress the revolt, and the military capacities of John of Gaunt were poor. His dominions shrank, and after the cruel and useless sack of Limoges, 1370, he returned to England, resigning his dukedom in 1372. He was buried in Canterbury Cathedral in the great tomb with his arms above, which still remains. His name of Black Prince cannot be traced earlier than the sixteenth century; tradition makes it due to his black armour. See J. Moisant, *Le Prince Noir en Aquitaine*, 1894; R. P. Dunn-Pattison, *The Black Prince*, 1910.

Black River, riv. of New York, U.S.A. It forms the boundary between the cos. of Hamilton and Herkimer, and empties itself in Lake Ontario. Its length is 200 m.

Blackrock, the largest of the suburbs of Dublin, Ireland. It has about 9000 inhab., and is a favourite seaside resort.

Black Rod, an official of the Brit. House of Lords, the full style being the 'Gentleman Usher of the Black Rod.' The name is derived from his staff, the insignia of his office, an ebony rod topped with a golden lion. The office dates from 1350. B. R. is also the first usher of the court and the kingdom, and as such takes part in all court and other ceremonies; he is also the prin. usher of the order of the Garter, and as such his duties include the guarding of the door at a chapter of the knights. His duties as an official of the House of Lords are the most important; they correspond to those of the serjeant-at-arms in the House of Commons. He maintains order and has the power to arrest a peer for breach of privilege of the House or other offences

noticed by the House. He is the official messenger from that House to the House of Commons. These duties are performed personally or by his deputy, the 'Yeoman Usher of the Black Rod.' Certain formalities and ceremonies are observed, interesting as dating from the attempt of Charles I. to arrest the 5 members in 1642 and as signifying the right of the Lower House to freedom of debate and security from interruption. When the House of Commons is summoned to the House of Lords to hear the king's speech from the throne or to attend at the giving of the royal assent to bills, B. R. has to summon their attendance; at his approach the doors are closed upon him: he knocks thrice, and announces his presence. On his admittance he addresses the Speaker, and if the king is present in person, the message is that 'the king commands the presence of the honourable House'; if he is represented by commissioners, then the word used is 'desires.' The office of B. R. is held by a distinguished military or naval officer; the salary is £1200 a year.

Black Scab, wart disease in potatoes, of fungoid origin. It causes excrescences which become black. Flowers of sulphur and gas lime put into the soil round unaffected plants is valuable as a preventive. An outbreak of B. S. must be notified to the Ministry of Agriculture.

Black Sea, or **Euxine** (anot. Pontus Euxinus, Turk. Kara Dengiz), inland sea situated between E. Europe and Asia Minor, bounded on the N. and E. by Russia, on the W. by Rumania, Bulgaria, and Turkey, on the S. by Asia Minor. Its greatest length is about 720 m., and the greatest breadth 380 m. The total area is about 170,000 sq. m. By the strait of Yenikale it communicates with the sea of Azov on the N., and by the Bosphorus, sea of Marmora, and the Dardanelles with the Mediterranean. On the N.E., E., and S.W. the coast is high, and flat on the N. and N.W. Its maximum depth reaches the prodigious figure of over 7000 ft., the 100-fathom line running close to the shores, except on the E. and W. of the Crimean peninsula. The salinity of the water is on the average only half that of the ocean, a fact due to the enormous body of fresh water poured in by the large rivers, such as the Danube, Dniester, Bug, Dnieper, Kuban, Rion, Kizil-Irmak, and Sakaria. There is a strong surface-flow out through the Bosphorus, and a deeper inward flow from the same direction. The strong currents, sudden and frequent storms, fogs, and occasional drift-ice sometimes render navigation difficult in winter. There is no perceptible tide. The deeper waters are apparently devoid of organic life, the higher forms not being known to exist below 100 fathoms. The chief ports on the sea are Poti, Odessa, Batum (which by means of the railway to Baku serves as a point of connection between the B. S. and the Caspian), Nikolaevo, Kustendji, Sulina, Kherson, Eupatoria, Kertch, Sevastopol, and Trebizond. There are no is. of importance. By the treaty of Paris (1856) the sea was closed to all ships of war. This provision,

however, was abrogated in 1871, and Russia and Turkey both have fleets in its waters. The question of naval forces in the B. S. naturally formed part of the discussions at the conclusion of the First World War, for whatever conditions were laid down by the victors as to the status of the Dardanelles and the Bosphorus *ipso facto* included the B. S. In the armistice signed at Mudros (Oct. 30, 1918), one of the chief conditions was that the straits should be open to the allied fleets. Thus Great Britain made a complete reversal of her former policy, which for a century had aimed at closing the straits to all nations' warships except Turkish. The result of this change was that the Brit. Navy secured the legal right to enter the B. S. when it intervened in the struggle between the Russian Whites and Reds in 1919 and 1920. At the same time the policy of the present rulers of Russia is a reversal of that of the old Russian Empire, and the U.S.S.R. now seeks to keep the B. S. open to only the warships of those powers with ter. on its littoral. For military operations at the B. S. ports in the Second World War see EASTERN FRONT or RUSSO-GERMAN CAMPAIGNS IN SECOND WORLD WAR.

Black Shirts, see FASCISM.

Black Snake (*Coluber constrictor*), ophidian reptile of the family Colubridæ. The name was given to it long ago by Mark Catesby (*q.v.*). It is a slender snake, harmless and non-poisonous. The male is smaller than the female; the largest specimen does not exceed 6 ft. in length. The colour is usually a dark shining black above, slate-grey beneath, with white markings, and a black tongue, but some of these animals are pale green and yellow, and are called green racers. The snake can swim, move swiftly on the ground, and climb lofty trees. Its food consists of frogs, toads, mice, smaller snakes, insects, birds, and eggs. It inhabits both N. and S. America.

Blacksoed Bay, a bay in Mayo co., Eire, N. of Achill Is., some 10 m. in extent.

Blackstone, tn. of Massachusetts, U.S.A., on the Blackstone R., 23 m. S.E. of Worcester. Pop. 5000.

Blackstone, Sir William (1723-80), Eng. jurist, b. in London, educated at the Charterhouse and Pembroke College, Oxford. He entered at the Middle Temple, 1741, and was made fellow of All Souls, 1744. In 1749 he became recorder of Wallingford. In 1753 he abandoned his legal practice and returned to Oxford to college duties and lecturing to pupils. In 1758 he became the first Vinerian prof. of law. The success of his lectures led to a pirated ed., and in 1765 he pub. the first vol. of the *Commentaries on the Laws of England*. The 4 vols. were completed and pub. in 1769. The reputation which he thus made drew him back to practice and public life. He was member of Parliament for Hindon, and later for Westbury, and in 1770 was made a judge of the court of common pleas. B. made no mark as a judge, nor as his miscellaneous writings of value; his fame rests upon his *Commentaries*

alone. This work became the indispensable text-book for lawyers for nearly a century, and was also a model on which the body of Eng. law was built up in America and the Brit. colonies. Written in a clear and readable style, it gave the first clear picture of Eng. law as a whole. It has permeated the whole idea of law for the ordinary man, and for long was treated with as much respect as if its text contained a final legal decision to which it must bow. Historians and jurists have broken the false position in which it was placed, but it must be remembered that the author aimed only at what he succeeded in achieving, an admirable and lucid exposition of the great body of law, which till the appearance of the *Commentaries* was a closed book to all but the highly trained expert.



BLACKTHORN

Blackthorn (*Prunus spinosa*), common shrub in hedgerows and thickets, marked by its black stems, hard sharp spines or thorns, and the pure white blossoms which appear before the leaves in Mar. and Apr. The fruit, generally known as sloes, is a small bluish-black drupe of a sour flavour. The species belongs to the genus *Prunus*, natural order Rosaceæ; from a wild species of *Prunus* the cultivated plum has sprung, but probably not from the sloe. The hardness of the wood of the B. and the fact that its black bark takes a fine polish, makes it a favourite walking-stick; in Ireland it was used for making 'shilleaghs' or cudgels.

Black Thursday, Feb. 6, 1851, the date of a bush fire of unprecedented magnitude in Victoria, Australia, causing enormous damage and loss of farming stock.

Black Varnish, large tree of the cashew nut family (Anacardiaceæ), and species *Melanorrhæa usitatissima*. Native of the forests of Pegu and Tenasserim, and said to reach a height of 80-100 ft. Large spreading head, broad leathery leaves; its wood is hard, black, and heavy. Its most important product is the sap which flows from the trunk on being

punctured. This sap is white, but becomes black on exposure to the air, and is used for lacquering. Also called Pegu lignum.

Black Vomit, the characteristic coffee-ground vomit of yellow fever. It is usually met by doses of creosote at short intervals, and the application of an ice-bag to the upper part of the abdomen.

Blackwall, a dist. included in the metropolitan bor. of Poplar in the E. of London, England. It is a riverside dist. N. of the Thames, containing the E. India Docks and the Thames Iron Works, where have been built many vessels for the Brit. navy. It has been a shipbuilding centre from early times. The B. Tunnel, giving access from the N. to Greenwich and the neighbouring dists., was begun in 1892 and opened in 1897. It is, with approaches, over 3000 ft. long, 1200 ft. being beneath the riv.; its internal diameter is about 24 ft. It cost nearly £1,500,000, and was designed by Sir Anthony Binnie, chief engineer to the L.C.C. at that time.

Blackwall, Anthony (1674-1730), Eng. scholar, graduated at Emmanuel College, Cambridge, and was early appointed headmaster of the Derby School. From 1722 to 1730, with the exception of the years 1726-29, when he was rector of Clapham, Surrey, he was headmaster at Market Bosworth Grammar School, Leicestershire. The wretched experience which Dr. Johnson had at this school as assistant master belongs to a period subsequent to B.'s direction. His most famous work, *The Sacred Classics*, 1725, in which he demonstrated the purity of the Gk. Testament, appeared in 1725. In his *Introduction to the Classics*, 1718, he gave a scholarly description of the beauties of the anc. writers.

Black Watch, the name of the first of the Highland regiments, so called because its uniform was a dark tartan, whilst the regular soldiers wore red. The regiment was formed from independent companies of Highlanders for service in Scotland in the seventeenth century and later became the 42nd Foot. In the year of its creation, John, second earl of Atholl, was granted a commission to raise a body of men to keep the peace in the Highlands. Three companies only existed from 1704 to the Union, these being under the direct control of the Treasury as regards pay, uniform, and fire-arms. But in 1729 the number was raised to 6, 3 of 100 men each, and the remaining of 70. Drawn chiefly from the Whig clans of the Campbells, Munros, etc., the B. W. enforced the Disarming Act under George II., and effectually helped to prevent any further national risings. In 1743 this regiment, now enrolled as the 42nd, served in Flanders, fighting at Fontenoy, etc., and later served for many years in Canada, W. Indies, and during the Amer. war of Independence. Under Wellington it served throughout the Peninsular war and at Waterloo. The Crimea, Indian Mutiny, and 1882 Egyptian campaigns are also among its honours. In 1756 its 2nd Battalion became the 73rd Foot,

whose early service was in India. It was at Waterloo, after which it served in the E. Indies, Mediterranean, Canada, Cape Colony, S. America, and Indian Mutiny. In 1881 the 42nd and 73rd were again united to form the Black Watch, which served with distinction in the S. African war, 1899-1902. A monument erected by the officers in Dunkeld Cathedral, commemorates all who had died in battle up to the settlement of the Indian mutiny in 1859. During the First World War 25 of its battalions served overseas in France, Flanders, Macedonia, Palestine, and Mesopotamia. In the Second World War the B. W. fought in France and the Low Countries, in Italy, and in the Far East. They were among the *élite* Brit. troops pitted against the best Ger. troops in the great battles of the winter of 1944-1945 for the Rhenish plain N. of Cologne. As part of the 51st (Highland) Div. of the eighth Army (*q.v.*), they fought in N. Africa and Sicily, and were in the very hard fighting around Corradini and Homs in Sicily late in the summer of 1943. Earlier, they took part in the fierce fighting in the battle of Akarat. In Burma other units formed part of the famous Chindit Force of Major-General Wingate.

Blackwater: (1) Riv. of Essex, England, rising near Saffron Walden. After a south-easterly course, it flows with the Chelmer into the N. Sea. (2) Riv. of Ulster, N. Ireland, rising in the S.W. of Tyrone, and falling into Lough Neagh at the S.W. corner. It is the boundary between Tyrone and Armagh. (3) Riv. in the S.W. of Cork co., Eire. Rising 16 m. N.E. of Killarney, it reaches the sea at Youghal, after a course of some 106 m. Navigable as far as Cappoquin.

Blackwater Fever, severe infectious disease occurring in tropical countries, and usually associated with malaria. It is characterised by irregular intermittent fever, vomiting, difficult breathing, and discoloured urine. Opinion varies as to whether it should be regarded as a specific disease, or whether the symptoms are merely a development of a malarial affection. It appears to be almost exclusively confined to the white race, and is found in India, Bengal, tropical Africa, Greece, Sicily, S. America, and parts of the United States. Cases are reported from dists. where the malarial parasite is not rife, but the characteristic symptom, hæmoglobinuria, is met with in other disorders common to tropical countries, and the tendency at the present day is to limit the term to the condition which has been preceded by some form of malaria. Various origins have been proposed for the disease: that it is due to tick-bite, that it is due to a blood parasite, that it is a quinine intoxication and that it is caused by a form of the malarial parasite. The theory that it is occasioned by the excessive use of quinine has had support, since Koch observed that after a malarial patient had neglected quinine and then taken a large dose, B. F. was developed. For this reason quinine was discouraged in the treatment of the disease, but more recent investigations have tended to show

that to be an unnecessary precaution. The presence of hæmoglobin or red-colouring matter in the urine is the result of the disintegration of red corpuscles through the action, probably, of the malaria parasite. Under favourable circumstances, the liver is capable of dealing with this waste product and the urine remains clear. A large dose of quinine, following upon its disuse for some time, has a depressing effect upon the liver, so that it is no longer able to deal with the debris of the red corpuscles, which therefore passes into the urine. Regular doses of quinine, therefore, are desirable to destroy the malaria parasite which is probably the cause of the blackwater condition as well as of the antecedent malaria. The aim of the treatment is to relieve the congestion of the liver, to destroy the parasite, to counteract shock, and to guard against nephritis, which is a common and dangerous complication. Epsom salts relieve the congestion, quinine must be administered for the destruction of the parasite, though the manner of its use may be modified by the previous quinine habit of the patient. A copious supply of liquid is necessary to keep the kidneys well flushed and to allay the constant thirst, and the chances of recovery are improved by removal to a non-malarial dist., if possible.

Blackwell, Alexander, Eng. adventurer, b. in Aberdeen early in the eighteenth century; probably the younger brother of Thomas B. (*q.v.*). He came up to London, having been to Aberdeen Univ., according to the *Bath Journal*, and was employed by a printer named Wilkins as a corrector of the press. He married a wife with a good dowry, and set up in business as a printer. He was ruined by the combination of the other printers against him, and spent 2 years in a debtors' prison. His wife, Elizabeth, extricated him from prison by making use of her artistic talent. She wrote a book with 500 illustrations of medicinal plants in colour, and this was pub. in 2 vols. in 1737. B. was next heard of in Sweden, where he was physician in ordinary to the king. He was beheaded on Aug. 9, 1747, for treason, having attempted in Mar. to induce the king to exclude the infant crown prince from the succession. The real inwardness of this supposed plot has never been discovered.

Blackwell, Elizabeth (1821-1910), Amer. physician, b. at Bristol, England. Her parents settled in Cincinnati, where, her father dying prematurely, she had to assist her mother to support a large family by running a boarding school. Decided to become a physician, and, in 1849, graduated with the highest honours at the Geneva Medical College, New York, being the first woman to obtain a medical degree in the U.S.A. Later, with a sister, she studied in Paris, and in spite of the prevailing prejudice and opposition to women practitioners, she started, in 1853, the Infirmary for Women and Children in New York, the first of its kind. Fifteen years later the sisters founded the Women's Medical College of New York

Infirmiry, afterwards affiliated to the Cornell Medical College. The following year she settled in London, where she took part in founding the National Health Society of London, and the London School of Medicine for Women. Lectured on medical and educational topics, and wrote: *The Physical Education of Girls*, 1852; *Moral Education of the Young*, 1879; *The Human Element in Sex*, 1884; *The Influence of Women in Medicine*, 1889; and *Pioneer Work in Opening the Medical Profession to Women*, 1895.

Blackwell, George (1545-1603), Eng. priest, *b.* probably in London. He graduated at Trinity College, Oxford, and from Oxford he went to Douay, where he was ordained in 1574. In 1576 he returned to England, where his creed brought him into trouble. In 1598 he was made archpriest over the secular clergy of England and Scotland, but was deprived of the office in 1608. He *d.* in gaol at Southwark.

Blackwell, Thomas (1701-57), Eng. scholar, *b.* at Aberdeen; educated at a grammar school there, and at Marischal College, Aberdeen Univ. He took his M.A. in 1718, and was elected to the professorship of Gk. at Marischal College in 1723. In 1748 he was made prin. of the college, a post which he held till his death, being the only layman to hold the post since it was under crown patronage. He became doctor of laws in 1752, and *d.* at Edinburgh on Mar. 8.

Blackwood, the timber of various Indian leguminous trees, common on the Coromandel and Malabar coasts. The chief species are the Indian papilionaceous tree, *Dalbergia latifolia*, the wood of which is used for making furniture; *Melhania melanoxylon* of New South Wales; and the *Acacia melanoxylon*.

Blackwood, Algernon (b. 1869), Eng. novelist, son of Sir Arthur B., Bt. The best of his earlier novels was *John Silence*, pub. in 1908. His forte is in the writing of tales of the uncanny and mysterious. Other novels include *The Human Chord*, *Incredible Adventures*, *Dudley and Gilderoy*, and *The Willows and other Queer Tales*. His reminiscences, *Episodes before Thirty*, were pub. in 1938.

Blackwood, Admiral Sir Henry (1770-1832), Brit. naval officer, the son of an Irish baronet. Entering the Navy in 1781, he became captain, 1795; rear-admiral, 1814; vice-admiral, 1821. He was warmly congratulated by Nelson for his conduct in a sea fight between the *Penelope*, which B. was commanding, and the *Guillaume Tell* in 1800. He was with Nelson at Cadiz, and afterwards served under Lord Collingwood. In 1807 he narrowly escaped drowning at the entrance to the Dardanelles, where his ship was destroyed by fire. He was present at the blockade of Toulon, and in 1819 he was made K.C.B., and commander-in-chief in the E. Indies. He was commander-in-chief at the Nore from 1827 to 1830.

Blackwood, William (1776-1834), Scottish publisher, *b.* at Edinburgh. The

family of B. has been traced back to the fifteenth century, one of the members being lord provost of Edinburgh 1711-13. B. served his apprenticeship to the book-selling business in Edinburgh, and afterwards worked in Glasgow and London before he settled in Edinburgh as a bookseller, dealing principally in old books, in 1804. In 1811 he set up as a publisher, and 6 years later, in Apr. 1817, the first number of *Blackwood's Magazine* was issued. Its literary merit assured its success, and B. gathered together a staff of such ability and distinction as to keep up its reputation. Among the many notable men who contributed to it then may be mentioned: Wilson, whose *nom de plume* was Christopher North, Dr. Moir (Delta), De Quincey, Galt, Maginn, Thomas Aird, Hogg, Michael Scott's *Tom Cringle's Log*, although under another name, was first pub. in *Blackwood's*. William B. himself was chief manager, and managed all correspondence connected with it until his death, which took place on Sept. 16. He was succeeded in the business by his sons.

Bladder, a hollow organ situated in the front part of the pelvic cavity. Its wall is composed of muscular tissue, and the urinary fluid from the kidneys is conveyed to it by 2 *ureters* which open into the under part of the B. The fluid is expelled through the *urethra*, the opening of which lies a little in front of the entrances of the ureters. The shape when empty is approximately that of a tetrahedron, but it becomes rounded when distended. The function of the B. is to serve as a reservoir for the urinary fluid from the kidneys before it is ejected from the body. Inflammation of the mucous membrane of the B. is known as *cystitis*, which may be either acute or chronic. In acute cystitis a blood-gorged condition of the mucous membrane with ulceration exists and may be observed by means of the cystoscope, an instrument by which an electric light is conveyed into the bladder by a narrow tube fitted with a lens. The disease may be caused by the decomposition of retained urine, the irritating effect of stony concretions, the use of unclean catheters, the presence of the bacilli of fevers, or gonorrhœa, or by the effect of certain irritants, as cantharides. The symptoms include pain in the suprapubic region, a constant desire to urinate, and opaque or bloody urine. The treatment aims at removing the cause, if calculi, relieving the painful symptoms, and encouraging the healing of the inflamed membrane. Very hot baths and the application of hot flannels are useful in relieving pain, and plenty of barley water should be drunk, while no strongly flavoured food or drink should be permitted. If the urine is acid, alkaline waters, such as Vichy, should be drunk; on the other hand, alkaline urine should be met by doses of benzoic acid. Morphia suppositories are used if great pain is felt. Chronic cystitis may arise from the effects of stone or through neglected or repeated acute cystitis. The symptoms are similar, but not so intense,

except that there is often more pus and albumin than in the acute form. The cause should be dealt with, whether calculus, antecedent prostatitis, or stricture. The B. should then be irrigated with sterilised water; at first plain boiled water and then water containing 1 in 15,000 of perchloride of mercury. The patient should be encouraged to expel the irrigating liquid from the B. himself. To give the B. a rest, it may be drained by incision. Obstinate cases often yield to a change of general surroundings and diet. The cure at Wildungen has been recommended for cases with alkaline urine and the waters at Contrexéville for acid urine. Other disturbances of the ordinary functions of the B. are irritability, often due to worry, overwork, or nervousness; incontinence of urine, generally in children; and retention of urine, perhaps a nervous failure or actual obstruction as the cause. In each case the cause should be dealt with. Incontinence in children generally cures itself; in older people general hygiene and habits of life should be looked to, and small doses of belladonna and the use of the faradic current help to effect a cure.

Bladder Campion, popular name of the *Silene inflata*, a herbaceous plant of the order Caryophyllaceae. Found in waste places and on hedgerows. Has inflated or bladder-like calyx, drooping flowers, and oval leaves.

Bladder-nut (*Staphylea pinnata*), species of Staphyleaceae. It is a shrub which grows in N. lands, and has a large, bladdery capsule as its fruit. The seeds are edible and yield oil.

Bladder-seed (*Physospermum cornubiense*), genus of perennial plant of the order Umbelliferae, common to Europe and W. Asia. The fruit is a schizocarp much inflated.

Bladder-senna (*Coletea arborescens*), species of Leguminosae cultivated in India and S. Europe. The legume dehisces when touched or in a strong wind, and thus scatters the seed. The leaves have properties similar to those of the genus *Cassia*, and are used in the adulteration of senna.

Bladder-worm, or Hydatid, a stage in the development of a cestode, or tape-worm. The egg of the tape-worm gives rise to a six-hooked embryo, which reaches the first host. It then develops into the larval form, when a cyst or bladder is formed round the vital portion. When the B. is swallowed by its final host, the scolex or vital portion is everted, the tail is thrown off, and the worm proceeds to develop segments and becomes the complete tape-worm.

Bladderwort (*Utricularia vulgaris*), aquatic plant of the order Lentibulariaceae found in ditches and ponds in Scotland and Ireland. It occurs as a submerged water plant with finely divided leaves, but the flowers appear above the surface on short stems; the plant has no roots. On the submerged leaves are borne curious little bladders, one-eighth to one-quarter of an in. in diameter. They are filled with water and the en-

trance is effected by a valve which is a sort of trap-door, guarded by long hairs to prevent large creatures from entering. Small crustacea and other animals pass in by the trap-door, but cannot return; and when the dead prisoners are decomposed they are absorbed by the cells which line the bladder.

Bladensburg, vill. of Prince George co., Maryland, U.S.A., situated on the E. branch of the Potomac R., 6 m. N.E. of Washington. On Aug. 24, 1814, a battle was fought, in which the Brit. were victorious, which decided the fate of the cap. Pop. 500.

Blades, William (1824-90), Eng. printer and bibliographer, became partner in his father's printing business. His interest in the hist. of printing led to the publication of his *Life of Caxton*, 1861-63, in which, by a careful comparison of types, he classified many Caxton eds. In his popular *Enemies of Books*, 1881, he discusses their foes, human and insect. A collector of old books and medals, he took an active part in public work, and was a keen supporter of the Library Association.

Bladderberry, see BILBERRY.

Blaenau Ffestiniog, tn. of Merionethshire, Wales, 9 m. N.E. of Portmadoc. It has extensive slate quarries. Pop. 8000.

Blaenavon, tn. of N.W. Monmouthshire, Wales, with ironworks and collieries. Pop. 12,000.

Blaeu, **Blaeuw**, or **Blauw**, **Willem Janszoon** (1571-1638), Dutch cartographer, b. at Alkmaar in Holland. A pupil of Tycho Brahe, he excelled all his predecessors in making terrestrial and celestial globes.

Blagden, Sir Charles (1748-1820), Eng. physician. He became secretary of the Royal Society in 1784, and in 1789 he was elected a correspondent of the Académie des Sciences, Paris. Most of his life was spent in the Army medical service. He did a certain amount of research work, and was also interested in antiquarian matters. He d. at Arouell, near Paris.

Blagoveschensk, tn. of Khabarovsk ter. of the R.S.F.S.R., on the Amur R. Scene of a massacre of Chinese civilians by Russian troops in 1900. Situated in the midst of fertile meadow lands, cornfields, and forested hill-sides, on a branch line of the Trans-Siberian railway, B. is a modern tn. with high stone buildings, large shops, and broad streets. The timber-built bungalows of the suburbs reflect the native art in their bright colours. It is the centre for the Zeya gold-mining dist., tea exportation to Russia, and cattle importation from Mongolia. It has also steam flour-mills and agric. engineering works. Founded in 1856, it has now a pop. of 63,000.

Blaikie, **Walter Biggar** (1847-1928), Scottish historian and publisher, educated at Edinburgh Univ. and in Brussels. In his early years he was employed in the public works department, India, as an engineer, but retired after a few years to join the printing firm of J. & A. Constable, of which he became president. Devoted much research to Jacobite hist.

and pub. *Itinerary of Prince Charles Edward Stuart, 1745-46, Origins of the Forty-five, Jacobite Perthshire, and Edinburgh in the Time of Prince Charles Edward's Occupation*. He founded the *Scots Observer*, and was one of the founders of the Scottish Geographical Society.

Blaine, James Gillespie (1830-93), Amer. statesman, b. at W. Brownsville, Pennsylvania, on Jan. 31. Of Scots-Irish parentage, he graduated at Washington College in 1847. He studied law in Augusta, Maine, and was editor of the *Kennebec Journal* and of the *Portland Advertiser*. He was elected to the Lower House of the state legislature in 1858 as a Republican. In 1862 he was elected to Congress where he sat for 13 years, being Speaker of the House from 1869 to 1874; he sat for 4 years in the Senate. In 1881 he was appointed secretary of state under President Garfield; he resigned after the assassination of the latter, but held the same office, from 1888 to 1892, under President Harrison. B. was nominated for the presidency in 1884 by the Republican party. The Democrats nominated Grover Cleveland. A campaign of almost unprecedented bitterness ensued. The orator who nominated B. at the Republican convention referred to him as the 'White-plumed Knight.' The Democrats seized upon this for all sorts of grotesque cartoons. The Republicans, who had not been defeated nationally since the Civil war, seemed to be winning the presidency as usual, when a Protestant preacher, who was campaigning for B., uttered the sneer that all that was at the back of Cleveland was 'Rum, Romanism, and Rebellion,' meaning that the liquor interests, the Rom. Catholics, and the 'rebels' of the Confederate S. of Civil war times alone were supporting the Democratic candidate. The speech created intense feeling, and to it is attributed a large share in the defeat of B. B. strongly opposed the issue of paper money during the Civil war and the immigration of Chinese. As secretary of state he was in favour of reciprocity treaties with other nations, but adopted a firm position in the seal-fisheries controversies with Great Britain. He was a ready debater, and resourceful in controversy. He wrote *Twenty Years of Congress*, 2 vols., 1884-1886, and *Political Discussions*, 1887.

Blainville, Henri Marie Ducrotay de (1777-1850), Fr. naturalist, b. in Paris. He became prof. of anatomy and zoology at Paris Univ. in 1812, and a member of the Academy of Sciences in 1825. In 1832 he succeeded Cuvier, on the latter's death, as prof. of comparative anatomy at the Collège de France.

Blair, Francis Preston (1791-1876), Amer. journalist and politician, b. at Abingdon, Va. After graduating at Transylvania Univ., he took to journalism and ed. the *Argus* at Frankfort. In 1830 as editor of the *Washington Globe* and a member of Jackson's 'Kitchen Cabinet' he became a powerful influence at Washington, but was ousted by Polk and Calhoun. He then supported Van Buren, and later helped to organise the new

Republican party. After Lincoln's reelection in 1864 B. succeeded in persuading Jefferson Davis to appoint a conference for the cessation of hostilities, but the conference proved abortive. After the Civil war he rejoined the Democrats.

Blair, Francis Preston (1821-75), Amer. soldier and politician, b. at Lexington, Ky., son of the above. He first practised law, then served in the Mexican war, and later became a member of the Missouri legislature. Elected as Republican to the House of Representatives in 1856, 1860, 1862. He was instrumental in preventing Missouri from joining the Confederacy. In 1868 he was Democratic candidate for the vice-presidency, and from 1871-73 was U.S. senator for Missouri.

Blair, Hugh (1718-1800), Scottish author and minister, b. in Edinburgh. He was minister of Canongate Church, Edinburgh, in 1743, and in 1754 of Lady Yester's church for 4 years. His *Lectures* were pub. on his resignation of the chair of rhetoric and belles-lettres. His chief fame, however, rests upon his *Sermons*, in 4 vols., which had an extraordinary popularity, and secured him a pension of £200. Time, however, has not confirmed the opinion of his contemporaries: the sermons have been described as feeble in thought though elegant in style.

Blair, James (1656-1743), Scottish author and minister. He went as a missionary to Virginia, U.S.A., 1685. Perceiving the lack of education he endeavoured to collect subscriptions to found a college at Williamsburg, and coming to England obtained the necessary charter; he was appointed the first president. B. was for some time president of the Council of Virginia, and rector of Williamsburg. In 1727 he assisted in compiling *The State of His Majesty's Colony in Virginia*.

Blair, John (d. 1782), Scottish chronologist, was a member of the B. family of Balthaycock, Perthshire. He was b. at Edinburgh. In 1754 his *Chronology and History of the World from the Creation to the Year of Christ 1753* was pub. by public subscription.

Blair, Montgomery (1813-83), Amer. politician and lawyer, b. in Franklin co., Kentucky. After service in the Seminole war, he took to the study of law and practised at St. Louis, Missouri. He was U.S. dist. attorney (1839-43), and mayor of St. Louis (1842-43). Removing to Maryland he devoted himself to practice in the Federal Supreme Court in 1852, and from 1855 to 1858 was U.S. solicitor in the court of claims, being associated with Curtis for the plaintiff in the Dred Scott case. He was postmaster-general in Lincoln's Cabinet, and from 1861 to 1864 introduced free city delivery, money order system, and the use of railway mail cars. He went over to the Democrats after the Civil war as a consequence of his views on the reconstruction policy.

Blair, Robert (1593-1666), Scottish divine, graduated at Glasgow Univ. and became a licensed preacher of the Scottish Presbyterian Church in 1616. Ordained

as bishop of Down, Ireland, in 1623, he was deposed 9 years later for nonconformity. When he was excommunicated in 1634, he set out for New England, but stormy weather drove the ship home again. In 1640 he came to England as one of the commissioners from the General Assembly to explain Presbyterianism to Episcopal clergy. Six years later he was elected moderator of the General Assembly.

Blair, Robert (1699-1746). Scottish poet and minister, *b.* at Edinburgh. In 1731 a living was bestowed upon him at Athelstaneford in E. Lothian. His one outstanding work was *The Grave* (1743), a poem in blank verse, extending to nearly 800 lines of very various merit, in some passages sinking to commonplace and in others rising to sublimity. It was illustrated by William Blake (*q.v.*). He also pub. a *Poem dedicated to the Memory of William Law* in 1728.

Blair, Robert, of Avontoun (1741-1811). Scottish judge, son of the preceding, *b.* at Athelstaneford. From 1789 to 1806 he held the post of solicitor-general for Scotland, and in 1808 became lord president of the court of session, which office he held till his death.

Blair, Robert (*d.* 1828). Scottish astronomer. He was prof. of practical astronomy at Edinburgh Univ. from 1785 till his death. He is chiefly remembered for his work in optics for the improvement of the telescope.

Blair Atholl, *vil.* of Perthshire, Scotland, 30 m. N.N.W. of Perth, at the confluence of the Garry and the Tilt. Blair House, the seat of the duke of Atholl, is situated at a distance of 11 m. from the *vil.* Part of it dates from the thirteenth century. Pop. 1500.

Blairgowrie, *tn.* of Perthshire, Scotland, situated on the r. b. of the R. Erich, 20 m. N.N.E. of Perth. The prin. industry is flax-spinning and weaving; the factories for which obtain their power from the Erich. *B.* is a summer resort on account of its pure air and picturesque situation. Cairns and Druidical remains have been found in the vicinity. Pop. (with Rattray) 3000.

Blaise, St., see **BLASIUS, ST.**

Blake, Robert (1599-1657). Eng. parliamentarian and admiral. He was the son of a well-to-do merchant, and was *b.* probably in the Sept. of the year 1599. He received a good education at Bridgewater Grammar School, and later at Wadham College, Oxford. During the years which followed his leaving college he was probably engaged in trade, and seems to have prospered. He entered Parliament in 1640, representing the bor. of Bridgewater in the Short Parliament, with the abrupt dismissal of which Parliament his career as a politician for the time being came to an end. On the outbreak of civil war he sided with Parliament and distinguished himself by his staunch resistance at Bristol against Prince Rupert, and later at Lyme Regis and at the capture of Taunton. The defence of Taunton against 2 royalist sieges raised his reputation, and in 1645 he entered Parliament

as its representative. Remaining an active supporter of Parliament, he was appointed 'general of the seas,' and was active in his pursuit of the Royalist fleet commanded by Prince Rupert. This fleet he blockaded first in Ireland and later in Portugal, avenging himself for the Portuguese refusal to allow him to attack the Royalists by causing great damage to the Portuguese fleet. In Nov. 1650 the royalists having been requested to leave Portugal, *B.* attacked them near Cartagena, and destroyed them. For this he received the thanks of Parliament and a financial grant. He remained admiral of the fleet, and captured the Scilly Isles, being, as a reward, made a member of the Council of State. During the Dutch war which broke out in 1652, *B.* continued to distinguish himself and defeated Van Tromp off Dover in the May of that year. After sev. successes against the Dutch, he suffered a defeat which he avenged by defeating the Dutch admirals in a 3 days' fight, which took place in the Channel. For a short period *B.* was compelled by ill health to retire, but in 1654 he returned to active service. He was sent with a fleet to exact reparation from the duke of Tuscany, the knights of St. John of Malta, and the Moorish pirates of the N. coast of Africa. Tunis was the only place which resisted him, and its fortifications were destroyed. The next war in which *B.* played a signal part was the Sp. war. Here, after cruising round the neighbourhood of Cadiz, he attacked the Plate fleet in the harbour of Santa Cruz in Tenerife. The harbour was narrow and well fortified, but the action was successful; the forts, castle, and fleet were entirely destroyed by the bold attack of *B.* and his fleet. This was his last great action, but for it he received the thanks of Parliament and the nation, and a diamond ring in testimony of his bravery. He *d.* at sea within sight of Plymouth. He was buried with great pomp and solemnity in Westminster Abbey. His body was disinterred at the Restoration and buried in the churchyard of St. Margaret's. There are sev. biographies, but from the historian's point of view they are not especially useful. They are to be found in *Lives English and Foreign* (1704), *il.*; Campbell's *Lives of the Admirals*; a life by Dr. Johnson founded on the 1704 work; and there is also one by H. Dixon, 1852. See also C. N. B. Barrett, *The Missing Fifteen Years (1625-40) in the Life of Robert Blake*, 1907.

Blake, William (1757-1827). Eng. poet and engraver, *b.* in London on Nov. 28. the son of a hosier, James B., who had a business at Golden Square. His father was a disciple of Swedenborg, who had prophesied that the year 1757, the date of *B.*'s birth, would be the beginning of a new world. This undoubtedly had an influence upon the natural mystic tendencies of the boy, who saw visions and conversed with angelic beings from his childhood. He early showed a taste for art, and at the age of 10 he was sent by his father to Pars's drawing-school in the Strand, and at 14 he was apprenticed to the engraver

Basire, who set him to drawing monuments in old London churches, thus inducing his love of Gothic art. In 1778, after studying for a short time at the Royal Academy, he became an independent engraver, producing some of the early work of Stothard, and making the acquaintance of Flaxman and Fuseli. In 1782 he married Catherine Boucher, daughter of a market-gardener, who became his skilful, sympathetic assistant in artistic and literary work. His first vol.

Gates of Paradise, 1793; *The Vision of the Daughters of Albion*, 1794; *America*, 1793; *Songs of Experience*, 1794; *Europe*, 1794; *The Book of Urizen*, 1794; *The Song of Los*, 1795; *The Book of Ahaniah*, 1795; *Jerusalem*, 1804; *Millon*, 1804. From 1800 to 1803 he lived at Felpham in Sussex with Hayley, for whose *Life of Cowper* he engraved the illustrations. After 1804 he devoted himself entirely to illustrative work, which included engravings for *Blair's Grave*, 1804-5, and designs for *The*



AN ENGRAVING FROM BLAKE'S 'BOOK OF JOB'

'Let the day perish wherein I was born.'

of poems, *Poetical Sketches*, appeared in 1783, but met with an indifferent reception. In 1784 he opened a print-seller's shop, having as assistant his younger brother Robert, who d. in 1787. In that year he experimented in printing with etched copper-plates, and it is related that the secret of this process was revealed to him in a vision by his brother, Robert. Others, however, say that he learned the process through his friend, George Cumberland, of Bristol (Geoffrey Keynes). Be that as it may, B. conceived the idea of engraving his poems and illustrating them with his own conceptions. In 1789 he issued *Songs of Innocence*, the book being entirely designed and produced by himself and his wife. In the same year appeared the *Book of Thel*, the first of his 'prophetic books,' which he believed were supernaturally dictated to him. These were followed by *The Marriage of Heaven and Hell*, 1790; *The*

Book of Job, 1821, *Paradise Lost*, 1822, and the *Divina Commedia*, 1825. His artistic work reveals great natural genius, which, had it been disciplined in conception and expression, would have placed him even higher among Eng. artists. *Lives* by A. Gilchrist, 1863 (reprint by Graham Robertson, 1907). There was also an enlarged ed. of Gilchrist's work in 1880, which has been reprinted, with notes, by Ruthven Todd, in Everyman's Library, 1942, and revised, with additional notes, in 1945. Arthur Symonds, 1907, and P. Berger, 1915. *Poems* ed. by Alice Meynell, 1911, and Max Plozman, 1927. See also A. Nicoll, *William Blake and his Poetry*, 1922; Max Plozman, *An Index to the Study of Blake*, 1927; O. Burdett, *William Blake* (Eng. Men of Letters series), 1927; and *The Note Book of William Blake*, ed. by Geoffrey Keynes, 1935 (includes the *Rossetti Manuscript*).

Blakeney, a vil. on the N. coast of Norfolk, England, 5 m. from Holt. There is good sailing to be had on a lagoon-like stretch of sea. Has a bird sanctuary of over a thousand ac. in extent. *The Shrieking Pil*, by Arthur J. Rees, has B. ('Flegne') for its chief locality.

Blakeney, William, Baron (1672-1761), Eng. soldier. He is said to have been the first to employ colour or drum to drill companies. Throughout Marlborough's campaigns he served as adjutant to his regiment. The enmity of Lord Verney hindered his advancement, so that he was 65 before he was promoted colonel. The duke of Richmond, however, secured him the lieutenant-governorship of Stirling Castle in 1745, having recognised his gallant services in the Cartagena expedition of 1741. His successful defence of that castle against the Highlanders led George II. to appoint him lieutenant-governor of Minorca in 1747. As the governor never appeared, he undertook the defence of the is. against the Fr. troops under Richelleu and La Gallisonnière at the commencement of the Seven Years war, 1756. Admiral Byng, who was afterwards executed for cowardice, came with a relieving squadron, but sailed away again, thus leaving B. no alternative but to surrender. Many honours, including the command of the Enniskillen regiment of infantry, awaited the veteran on his return home.

Blakesley, Joseph Williams (1808-85), dean of Lincoln, b. in London on Mar. 16. He was educated at St. Paul's School and Corpus Christi and Trinity Colleges, Cambridge, becoming fellow and tutor of the latter college. He became dean of Lincoln in 1872. A *Life of Aristotle*, 1839, and an ed. of Herodotus, 1852-54, were his chief works.

Blakiston, Thomas Wright (1832-91), Eng. explorer, b. at Lynton, Hampshire, on Dec. 27. Joining the army in 1851, he saw service in the Crimea and elsewhere. His chief work as an explorer was done on the upper course of the Yang-tse-Kiang in 1861. From 1863 to 1884 he was a merchant in Japan, and there interested himself in ornithology. He d. in California on Oct. 15.

Blamire, Susanna (1747-94), Eng. poetess, b. at Cardew Hall, near Carlisle. Her poems were not pub. until 1842, when they were collected, with considerable trouble, by Henry Lonsdale, M.D., and Patrick Maxwell, 2 gentlemen who became interested in her work. The collection, which was pub. under the title of *The Poetical Works of Miss Susanna Blamire, the Muse of Cumberland*, contains some of the best of north-country lyrics.

Blamire, William (1790-1862), Eng. agriculturist. He graduated at Christ Church, Oxford, and then took up farming near his home at Dalston, Cumberland. He became popular with the yeomen of the co., because he was always willing that his neighbours should profit by his experiments in agric. improvements, and in 1828 he was appointed high sheriff, and 3 years later, after an exciting election, was returned to Parliament as a repre-

sentative of the Whig party. In 1836 he made a remarkable speech on the Tithe Commutation Bill, and, when it became law, was nominated chief commissioner to supervise its administration. The work of assessing the rent charges for each par. and of apportioning those charges between various properties was complicated by the lack of reliable maps, and lasted from 1836 to 1851. It was at B.'s suggestion that the ordnance survey of 1842 was undertaken. His practical and expert knowledge of land tenure also rendered his assistance invaluable to the Gov. in preparing both the Copyhold Enfranchisement Act of 1841, and still more the Commons Enclosure Act, 1845. The principles he laid down in a Highways Bill of 1846 have guided all later legislators on that subject.

Blanc, François, Fr. financier, originally the owner of a casino in Homburg. On the expiry of his lease there he obtained, in 1861, a concession from Charles III. for the lease of the casino of Monte Carlo for 50 years. At his death it was taken up by the Société Anonyme des Bains de Mer et Cercle des Étrangers.

Blanc, Jean Joseph Charles Louis (1811-1882), Fr. revolutionary politician and historian, b. at Madrid on Oct. 29. He studied law at Paris, and contributed to various journals. He founded the *Revue du Progrès* in 1839, and pub. in it an article on the 'Organisation of Labour', the principles of which are those which guided him all his life. In this article he stated his view that competition is the main evil of industry. For a remedy he proposed equalisation of wages, social workshops, and such measures, made possible by a recognition that personal interests are of less importance than the welfare of the community. In 1841 B. pub. his *History of the Ten Years 1830-40*, which caused a sensation, and did much harm to the cause of Louis Philippe. The first 2 vols. of the *History of the French Revolution* came out in 1847. On the success of the revolution of 1848, he became a member of the provisional gov., and presided over a gov. commission to report on labour questions. In spite of his repudiation of the responsibility for the disastrous experiment of the *ateliers nationaux*, he was generally and unfairly held responsible for them. The sansculottes wished to place him at their head, and the National Guard wished to imprison him; he was charged with complicity in the disturbances of May, June, and Aug., and condemned in his absence. He took refuge in England, and remained there until the downfall of the empire. During his sojourn he completed his *History of the French Revolution*, in 12 vols. On his return to Paris he was in 1871 elected a member of the National Assembly. He d. at Cannes on Dec. 6. Though he possessed a vivid style and a good power of research, his historical writings are too political in tone. His works have, however, influenced socialist opinion in France.

Blanc, Mont, the culminating peak in the mt. range bearing the same name, is

the highest mt. in the entire chain of the Alps, and in Europe with the exception of certain peaks in the Caucasus Mts. It rises to the S. of Chamonix, in Fr. ter., and to the N.W. of Courmayeur, which belongs to Italy. When the treaty which ceded Savoy to France was ratified in 1861 it was agreed that France should have the possession of the highest summit. A dispute between 3 Fr. communes over the possession of the mt. was not settled until Apr. 1946, when it was decided

year Jacques Balmat and 2 local men again made the ascent, whilst later in 1787, the Genevese naturalist, to whom a statue has been erected at Chamonix, H. B. de Saussure, made the third ascent. The first Englishman to attain the summit was Colonel Beaufoy, who achieved the feat a week later than de Saussure. These ascents were all made from Chamonix, which is the usual starting-place, though in the course of time ascents have been made from almost every side. The



MONT BLANC

D. McLeish

The huge Bossons and Tacconnaz glaciers from the N.W.

that the summit ridge lay on one side in the com. of Chamonix and on the other in the com. of Saint-Gervais-les-Bains. The whole range bearing the name M. B. forms part of the Pennine Alps and is unequally divided between France, Italy, and Switzerland; M. B. itself rises to a height of 15,782 ft. In former days the mt. was called in some places the Montagne Maudite, or simply Les Glacières, but the present name appears to have been always in local use; the name M. B. occurs in an It. document of the year 1694. Its old name, Les Glacières, had its origin in the distinguishing feature of the mt., the immense glaciers which are found on all sides of it. Among the best known may be mentioned those of Bossons and Tacconnaz, on the N. slope, and those of Brenva and Miage on the S. slope. The first ascent of M. B. was made in 1786 by 2 Chamonix men, Jacques Balmat and Dr. Michel Paccard. In the following

easiest route is by way of the inn of the Grands Mulets, from Chamonix, to the Bosses du Dromadaire shelter-hut, and thence to the summit. Miss Isabella Straton in Jan. 1876 was the first to make an ascent in winter. The view from the summit of the mt. is naturally very extensive, Lyons being visible, but owing to the great height is not so clear as might be wished. The inn at the Grands Mulets stands at a height of 9909 ft., the shelter-hut at the Bosses du Dromadaire, built in at a height of 14,312 ft., whilst in 1893 an observatory was constructed just below the summit by T. J. C. Janssen. See A. W. Moore, *The Alps in 1864*, 1867; C. E. Mathews, *The Annals of Mont Blanc*, 1898; Sir C. Schuster, *Peaks and Pleasant Pastures*, 1911; F. S. Smythe, *Climbs and Ski Runs*, 1929; M. Kurz, *Guide de la Chaîne du Mont Blanc* (4th ed.), 1935; T. Graham Brown, *Brenva*, 1943.

Blanca Peak, estimated to be the highest.

peak in Colorado, U.S.A. It is in the co. of Costilla, and is among the Sangre de Cristo Range. Its altitude is 14,464 ft.

Blanch, or Blench, Holding, the name of one of the anct. feudal tenures in the law of Scotland. Under this holding the vassal has to pay to the superior only a nominal duty, as a badge of servitude, such as a penny Scots, a bunch of roses, or, as in the case of Jock Howieson, the service of a ewer and basin in order that the king may wash himself. It is now seldom adopted in the constitution of the original right of property. In the matter of casualties, etc., it is the same as feu and charter tenure.

Blanchard, Edward Litt Laman (1820-1889), Eng. miscellaneous writer, was the author of a number of dramas, farces, and burlesques. For 37 years he wrote the Drury Lane pantomime, and he sold plays to provincial theatres at 10s. an act. As dramatic critic he contributed to many papers, among them being the *Weekly Despatch* and *Daily Telegraph*. From 1841-45 he was in turn editor of 3 papers. He also wrote 2 novels, countless comic songs, and illustrated guides to places of interest. Hardly any of his works have been pub.

Blanchard, Jacques (1600-38), Fr. painter, b. at Paris. He studied under his uncle. In 1624 he visited Rome, and 2 years later Venice. Here he studied the paintings of Titian and others. He returned to Paris and executed numerous works. In virtue of these he was called the Fr. Titian. 'The Descent of the Holy Spirit,' which hangs in Notre-Dame, is considered his best painting.

Blanchard, William (1769-1835), Eng. comedian, was prompted by his delight in Shakespeare to become an actor. In 1785 he joined Mr. Welsh's travelling company, and after an unsuccessful attempt as a theatre manager, made his debut at Covent Garden as Bob Acres, in 1800. With this theatre he was connected until 1834, except for one break when he toured in America. In his youth he was favourably compared with John Kemble, and was especially famous for his Shakespearian impersonations of Fluellin, Polonius, and Menenius, whilst Leigh Hunt enjoyed above everything his interpretation of the role of the Marquis de Grand-Château in the musical play, *The Cabinet*. De Wilde painted him as Sir Andrew Aguecheek.

Blanche, Jacques Emile (1861-1942), Fr. painter and art critic; educated at the Lycée Fontanes, where Mallarmé was his English master. Encouraged by Manet and Renoir, he set up a studio at Bas Fort Rouge, Dieppe, where he was often visited by Sickert, who became one of his closest friends. His work shows the strong influence of Manet, Degas, and, later, the early Eng. portrait school, in the style of which he produced a successful series of portraits of women. Portraiture was his main study and his best portraits include those of Beardsley, Debussy, Degas, Henry James, Maeterlinck, Ricketts, and Rodin. He also made some of the best impressions of London that have been

seen in modern times. There is a large collection of his landscapes and flower-pieces in the Rouen museum. He wrote much art criticism, especially in the *Revue de Paris* and *L'Art Vivant*; also wrote novels and reminiscences, including *Cahiers d'un artiste*, a work which notably influenced Proust's *A la recherche du temps perdu*. His short stories appeared under the nom. de plume of Jaime de Beslou. He also pub. 2 books of memoirs: *Portraits of a Lifetime* (1937) and *More Portraits of a Lifetime, 1913-38* (1939). The first of these re-creates the artistic life of Paris before the First World War, and literary questions are amply treated, for B. had made a study of the technique of the modern novel. In this vol. are pen-pictures of Max Beerbohm, Diaghilev, King Edward VII., Thomas Hardy, Henry James, George Moore, Nijinsky, Proust, G. B. Shaw, Sickert, Whistler, and Oscar Wilde. They show an intimate acquaintance with the artistic and social life of late-Victorian and pre-1914 London. The importance of the second vol. lies in its reflection of an intellectual, social, and artistic England and France seen broadly from the point of view of a Fr. aristocrat of the Third Republic. Among the portraits in it are those of Clemenceau, Ramsay MacDonald, Woodrow Wilson, King George V., Lytton Strachey, Virginia Woolf, Cocteau, Léon Blum, and Matisse.

Blanche, Dent, an Alpine peak, rising to the W. of Zermatt and opposite to and N. of the Matterhorn. Its altitude is 14,318 ft. The ascent, which presents great difficulties, was first made by T. S. Kennedy and W. Wigram in 1862.

Blanche fleur, see FLOIRE ET BLANCHE-FLEUR.

Blanching, or **Etiolation**, horticultural term applied to the method of growing certain plants and vegetables to render them more succulent. The action of light is a necessity to the leaves of plants in order that they may decompose carbonic acid gas, and consequently the exclusion of light causes changes in the metabolism of plants. Many vegetables which when grown under ordinary conditions are bitter, coarse, and injurious, are made tender and tasteful by B. B. is usually an artificial process, though a kind of natural etiolation may be observed in the cabbage. There are 3 main ways of B. plants: (a) By earthing up the leaves and stems of plants. This practice is followed in the case of celery, asparagus, etc. Celery is planted in trenches, and earth is drawn up round the plants as they grow. (b) By tying up the leaves with pieces of bass; this is the method adopted in the case of cos lettuces, and sometimes with endive. (c) By overlaying with tiles, slates, or B. pots, which are earthenware vessels of a sugar-loaf shape. By this means the light is excluded from seakale, rhubarb, etc., and no green appears in the leaves. The B. pot is often employed in France for lettuce, and in the Pyrenees celery is blanched by this means. Cardoons are blanched by tying up each plant into a long, oval, and compact bunch. A drainpipe filled with sand

is then placed over each plant, or they are earthed up after the fashion adopted with celery. B., whilst being by no means a difficult process, is one which has very important results. By means of this process, seakale, which otherwise is unpalatable if not absolutely deleterious, is rendered palatable and appetising, whilst the common dandelion, when etiolated, is worthy of a place in a salad.

Blancmange (Old Fr. *blancmanger*, 'white food'), originally a dish of fowl minced with cream, rice, almonds, sugar, eggs, etc. It is now a sweet dish made of cornflour, gelatine or isinglass, and milk.

Blanco, Antonio Guzman (1828-99), Venezuelan soldier and a native of Caracas. The Federal revolts of 1859-63 saw him actively engaged. He became vice-president under Falcón in 1863. By a counter-revolution he triumphed over an attempt to depose him, and became president on the death of his superior. A series of re-elections skillfully manipulated kept him in office till 1888.

Blanco, Cape, headland on the W. coast of Africa, in 20° 47' N. lat. and 16° 58' W. long. It lies at the end of a rocky ridge projecting from the W. extremity of the Sahara.

Bland, Edith (1859-1924), Eng. novelist, wife of Hubert B. (q.v.), writing under the pen-name 'E. Nesbit.' Specialised in children's tales. Pub.: *Lays and Legends* (1886); second series (1892); *Songs of Love and Empire* (1898); *Book of Dragons* (1900); *Five Children and It* (1902); *The Phoenix and the Carpet* (1904); *The Railway Children* (1906); *The Incomplete Amoris* (1906); *The Incredible Honeymoon* (1921).

Bland, Hubert (1856-1914), Eng. author and essayist. He was one of the founders of the Fabian Society (q.v.). Under the name 'Hubert' he contributed essays to the *Sunday Chronicle*, later reprinted in book form. Other books are *With the Eyes of a Man*, 1905; *The Happy Moralist*, 1907; and *Olivia's Latchkey*, 1913.

Bland, Humphrey (1686-1763), Eng. soldier and military writer, took part in the Jacobite rebellion of 1715, and also in the rebellion of 1745, where he served as major-general in the Culloden campaign. It was whilst he was lieutenant-colonel of the king's dragoon guards that he pub. his *Treatise on Discipline*, 1727, which served for many years as the recognised textbook on that subject. He distinguished himself at Dettingen and Fontenoy during the Flanders expedition. From 1749 he was governor of Gibraltar, till he was appointed in 1753 commander-in-chief of the Scottish forces—a post which he held to his death.

Bland, Maria Theresa (1769-1838), It. vocalist, b. of Jewish parentage. Her first appearance at Drury Lane was in 1768, when she took the part of Antonio in Grétry's *Richard Cœur-de-Lion*, and she was connected with this theatre almost continuously until 1824, when an attack of melancholia obliged her to renounce the stage. She also sang at Vauxhall and the Haymarket. She was remarkable for the sweet quality of her

voice (mezzo-soprano) and her unaffected style, whilst as an actress it was her vivacity that charmed.

Blanford Forum, tn. of Dorsetshire, England, on the R. Stour, 16 m. N.E. of Dorchester by railway. Has an old grammarschool. It was almost destroyed by fire in 1731. There are many Rom. and prehistoric remains in the vicinity. Pop. about 3500.

Blandrata (properly *Biandrata*) **Giorgio** (c. 1515-88), Unitarian, b. of an old Piedmontese family, and educated in France. He early attached himself to the left wing of Protestantism, and fomented the antitrinitarian heresy of the It. Church of Geneva. He had been obliged to flee from Montpellier in 1556 to Geneva because of his heterodoxy, and there he remained until in 1558 Calvin's wrath drove him to Poland, where Unitarianism was gaining ground. Finally he took refuge in Transylvania, where, as physician to John Sigismund, the prince, he was able to spread his doctrines over a wide sphere. Transylvanian Unitarianism was probably founded by him.

Bland-Sutton, Sir John (1855-1936), Eng. surgeon, b. at Enfield, Middlesex, England. He was consulting surgeon to the Middlesex Hospital where he studied medicine and surgery from 1878; president of the Royal College of Surgeons, 1923-26; president of the Royal Society of Medicine, 1921-22. He accomplished valuable research work, particularly on diseases of women. Publications: *Evolution and Disease*, 1890; *Ligaments, their Nature and Morphology*, 1891; *Surgical Diseases of the Ovaries*, etc., 1891; *Tumours, Innocent and Malignant*, 1894 (7th ed., 1922); *Gallstones and Diseases of the Bile Ducts*, 1907; *Fibroids of the Uterus*, 1913; *Selected Lectures and Essays*, 1920; *Orations and Addresses*, 1924; *On Faith and Science in Surgery*, 1930; *The Story of a Surgeon*, 1930; *Men and Creatures in Uganda*, 1933.

Blane, Sir Gilbert (1749-1834), Scottish physician, b. in Ayrshire. At 14 he went to Edinburgh Univ., originally to study for the Church, and ultimately for a doctor's career. He took his M.D. degree at Glasgow Univ. in 1778. In 1779 he went out to the W. Indies as physician to Admiral Rodney, and from that time he was physician to the fleet. He wrote accounts of sev. engagements and victories which he witnessed, and he received a pension from the Crown. In 1781 he accompanied Rodney home, and in the same year he was admitted as licentiate of the College of Physicians. He introduced reforms while he had medical charge of the W. India fleet. He was consulted by the Home Office upon sev. matters, and also by the Turkey Company. He helped in drawing up the rules for the Quarantine Act of 1799.

Blanesburgh of Alloa, Robert Younger, Baron (1861-1937), Eng. judge; youngest son of James Younger, of Alloa, co. Clackmannan; and brother of the first Viscount Younger of Leckie. Educated at Edinburgh Academy; and at Balliol College, Oxford—of which he was made honorary fellow, 1916. Called to the Bar (Inner

Temple), 1884; took silk 1900. Benchor of Lincoln's Inn, 1907; privy councillor, Nov. 25, 1919. Judge of the chancery div. of the High Court, 1915-19; Lord Justice of Appeal, 1919-23; Lord of Appeal in Ordinary and life peer, Oct. 12, 1923. Very rapid in thought and fluent in language.

Blanford, Henry Francis (1834-93), Eng. geologist and meteorologist, studied at the School of Mines and at Freiberg, Saxony. As a member of the Geological Survey of India, he classified the Cretaceous strata near Trichinopoly. Later he was appointed meteorological reporter to Bengal, in which capacity he made discoveries about the cause of cyclones and also pub. treatises dealing with the meteorology of India. In 1880 he was elected F.R.S., and in 1884 president of the Asiatic Society of Bengal.

Blanford, William Thomas (1832-1905), geologist, b. in London on Oct. 7; educated at the Royal School of Mines, London, and later at the Mining Academy, Freiberg, Saxony. Between 1855 and 1882 he formed part of the geological survey party to India, and later accompanied the Abyssinian Expedition in 1868. He became president of the geological section of the Brit. Association in 1884, and pub. *Observations on the Geology and Zoology of Abyssinia*, 1870; *A Manual of the Geology of India*, 1879; and *Mammalia*, 1888-91.

Blankenberghe, tn. on the coast of W. Flanders, Belgium, 13 m. N.E. of Ostend. It has a fishing industry, and shipbuilding is carried on. The normal pop. is about 7000, but this is swollen in summer when B. becomes a popular seaside resort. On Feb. 12, 1915, B., Ostend and Zeebrugge were raided by Brit. naval aircraft, and on Sept. 24 B. was bombarded by H.M.S. *Terror*. The coast was constantly patrolled by the Brit. Fleet, but it was not until Oct. 18, 1918, that B. was retaken and occupied by allied troops.

Blankenburg, health resort in Thuringia, Germany, at the confluence of the Rhine and the Schwarza, 27 m. S.W. of Jena. It is situated in a lovely neighbourhood, and near by are the fine ruins of the castle of Greifenstein, built by the Ger. king, Henry I. Pop. 5000.

Blankenburg, tn. in the former Ger. state of Brunswick, at the foot of the Harz Mts., 12 m. S.W. from Halberstadt by rail. It has a castle, a museum of antiquities, sev. fine churches, and pine-nedule baths. From the Teufelsmauer (the devil's wall), which is in the neighbourhood, fine views can be observed. The tn., which is a noted health resort, has a pop. of 12,060.

Blanket, woollen or cotton fabric used as a covering on beds, etc. Whilst all good Bs. are made wholly of wool, Bs. of inferior quality are made of cotton warp and woollen weft. In these Bs. the threads of the woollen yarns are raised to the face of the fabric in a loose, soft mat so as to hide the cotton threads. The process by which this is done is called teasing, and it is effected by means of steel brushes called teasels, which are

fixed in gigs, or brushing machines, and brush up the threads on the face of the B. The prin. varieties of Eng. Bs. are the Witney, the Kersey, the Yorkshire, the Bath, and the Bury, the last named being more like ordinary wool cloth. The Scotch Bs. are always made wholly of wool, and are more durable than the Eng., though sometimes not so comfortable. The prin. Scottish mills are in Ayrshire, Berwickshire, and at Markinch in Fifeshire. Very delicate Bs. come from Mysore, in India, being made of such fine fabric that they can be rolled up into a small compass.

Blanketeers, the nickname given to 5000 Lancashire operatives, who met in St. Peter's Field, near Manchester, on Mar. 10, 1817. They determined to march to London and see the prince regent in order to obtain redress of their grievances. The Habeas Corpus Act was suspended and the leaders were imprisoned, whilst the bulk of the operatives yielded. As a result of the meeting, however, the spokesmen had an interview with the Home Secretary, Lord Sidmouth, and some reforms were made. The name B. was given to them because each carried a blanket for camping out.

Blankney, vil. of Lincolnshire, England, 8 m. from Sleaford by rail. Centre of a famous hunt.

Blank Verse, verse without rhyme. In its wider sense the term B. V. signifies all verse in which the rhymes are lacking, but the term has come to have a more restricted significance, being generally applied to verse consisting of ten-syllable iambic lines. The major part of Eng. dramatic and epic poetry is written in B. V. of this measure. It was first used by the Earl of Surrey (*q.v.*) in his trans. of the *Aeneid*. See also POETRY; VERSE.

Blanqui, Jérôme Adolphe (1798-1854), Fr. economist, b. at Nice on Nov. 21. He was a schoolmaster in Paris, when he was caused to study economics by reading the works of J. B. Say, whose pupil and assistant he became. He was appointed to a professorship of industrial economy and of hist. at the Conservatory of Arts and Commerce, upon Say's recommendation, and succeeded the latter as prof. of political economy in 1833. In 1838 he became a member of the Academy of Moral and Political Sciences. His most important work is his *History of Political Economy in Europe*, 1838.

Blanqui, Louis Auguste (1805-81), Fr. revolutionary politician, b. at Puget-Théniers, near Nice. He studied both law and medicine before taking up a political career. He was decorated for his services in the revolution of 1830, but continuing to preach his Republican doctrines during the reign of Louis Philippe, he was often imprisoned. He was condemned to death in 1840, but the sentence was commuted to imprisonment for life. He was leader of the extreme Socialist party after the revolution of 1848, but was sentenced to 10 years' imprisonment in 1849, and again in 1861, but escaped and was abroad till after the downfall of the empire, when he returned and founded *La*

Patrie en Danger. On the 31st October (1870) the National Guard, led by B., came into conflict with the gov. troops, and for a brief space he became head of a provisional gov. But following the fall of the commune in May (1871) B. was sentenced to death, the sentence being subsequently commuted to life imprisonment. He was elected deputy for Bordeaux in 1879, but the election was invalid owing to his being in prison; he was, however, set free. He d. as the result of an apoplectic stroke on Jan 1.

Blantyre, the oldest settlement in Nyasaland, Brit. Central Africa, is the terminus of the Shire Highlands railway, contains the High Court of the Protectorate and is its commercial centre. The Queen Victoria Memorial Hall contains a well-stocked library and there are sev. hotels. The Church of Scotland Mission, in 1876, estab. its headquarters 2 m. away, and the residence of its head is said to be the oldest European dwelling between the Zambesi and Khartoum. The tn., which stands at an altitude of 3500 ft., is scattered on a series of hills, and is mainly built of good local brick. The temp. varies between 50° F. and 96° F., and the mean rainfall is 37 in. The exports are tobacco, cotton, coffee, fibre, and tea. There are about 600 Europeans in the tn., and about 17,000 natives. The dist. of B. has a pop. of about 94,000.

Blantyre (Gaelic, warm retreat), par. of Lanarkshire, Scotland, a few m. S.E. of Glasgow. The chief tns. in it are High B. and Low B. High B. has in the neighbourhood Calderwood Castle, in Rotten Calder-water, a very picturesque building. Coal-mining is the chief industry. It has a pop. of about 3000. Low B. is chiefly noteworthy for the fact that both David Livingstone and his brother Charles were b. there, and worked as piecers in the local cotton mill. The remains of B. priory, founded late in the thirteenth century, are to be seen near by on the l. b. of the Clyde. Coal mining and a little cotton spinning are carried on. Pop. 17,000.

Blaps, genus of black beetles which numbers more than 100 species. They are dark, wingless, and slow in movements; of nocturnal habits, they feed on dead vegetable matter, and possess the power of ejecting an acrid fluid with a pungent odour for a distance of sev. in. A common Brit. species is the *B. mortisaga* or 'churchyard' beetle, which used to be considered as the harbinger of death. The species *B. sulcata*, when cooked in butter, was used as a food in Turkey, especially by women, as it was believed to be fattening.

Blarney, small tn. in co. Cork, Eire, 5 m. N.W. of Cork. It contains an old castle which is built on the site of a still more anct. one built in 1446 by Cormac McCarthy. The noted 'B. stone,' which is supposed to render the person who kisses it as persuasive as the serpent, is situated about 20 ft. from the summit. The feat of kissing it requires some nerve, as the person essaying it has to be held by the

legs and swing face downwards to reach the stone. Pop. 800.

Blasco-Ibáñez, Vicente, see IBÁÑEZ.

Blasius, or **Blaise**, St., bishop of Sebaste in Asia Minor, was martyred in the reign of Diocletian on Feb. 3, 316. His day is still kept as a festival by the Rom. Catholics, and by the Orthodox E. Church on Feb. 11. He is the patron saint of woolcombers, as his flesh was said to be torn by their irons, and he is associated with diseases of the lungs and throat.

Blasphemy, insulting and opprobrious speech offered to God or persons or objects esteemed sacred. Among the canonists the definition of B. is made to include the denying of God, or the asserting of anything to be God which is not God. Blackstone describes B. at common law as comprising 'the denying the being or providence of God, contumelious reproaches of our Saviour Christ, profane scoffing at the Holy Scripture, or exposing it to contempt and ridicule.' The punishment is fine and imprisonment. The 9 Will. III. c. 35 enacts that if any person educated in or having made profession of the Christian religion should by writing, printing, preaching, teaching, or advised speaking deny any one of the persons of the Holy Trinity to be God, or shall assert that there are more Gods than one, or shall deny the Christian religion to be true, or the Holy Scripture to be of divine authority, he shall upon the first offence be rendered incapable of being a guardian or executor or of taking a legacy or deed of gift, and suffer 3 years' imprisonment. According to the decision in *R. v. Carlisle*, the statute is cumulative in operation and in principle merely declaratory of the common law, although apostasy is constituted by the statute a distinct substantive offence included in B. But it has been held that the offence does not consist in an honest questioning of the truths of the Christian religion, but rather in a wilful intention to pervert, insult, and mislead others by means of licentious and contumelious abuse applied to sacred subjects. The disputes of the learned on religion are not punished as B. (*R. v. Woolston*). Whether these latter dicta be sound common law or not, they are in harmony with the trend of public opinion against putting in active operation the law of B. in all its rigour. Smith's Act, 1813, relieves persons denying as therein mentioned the doctrine of the Holy Trinity. Publications which assail in an indecent and malicious spirit Christianity or the Scriptures in language calculated and intended to shock the feelings and outrage the belief of mankind, are regarded as blasphemous libels (*R. v. Bradlaugh*). The law is rarely put in force.

Blass, Friedrich (1843-1907), Ger. scholar, b. at Osnabrück, Hanover, prof. at Kiel Univ. from 1881 to 1892, and at Halle Univ. after 1892. He ed. numerous classical texts, notably the orations of Æschines, Andocides, Antiphon, Demosthenes, Dinarchus, Hyperides, Isocrates, and Lycurgus. His other works

include *Die attische Beredsamkeit*, 1887-1898; *Die Aussprache des Griechischen*, 1888; *Plutarch, Tiberius und Gaius Gracchus*, 1875; *Grammatik der neutestamentlichen Griechisch*, 1902; *Bacchylidis Carmina* 1898.

Blasting, the method of shattering or loosening masses of mineral by the discharge of an explosive. It is used both in excavation or tunnelling where the material has no particular value, and in mining, where the material has to be recovered, often in a certain state of coherence. In B. for the purpose of loosening obstructing rock, a large charge of gun-cotton or nitro-glycerine or a series of charges round a central core is used, the effect being to disturb the rock for a certain distance around a given point, the debris being then removed by ordinary pick or navvy work. In B. for minerals of economic value it is usually advisable to loosen the material along the natural lines of cleavage. Small charges are therefore used, and the material can then be removed in bulk without the admixture of foreign substances and the over-pulverisation that a shattering charge would cause. To effect the explosion a hole is drilled by hand or machinery to a depth of some feet, a cartridge of cylindrical form is inserted with the wire terminals hanging loose, the hole is 'tamped' or plugged up with clay or mud, the terminals connected with wires attached to a battery, and the battery carried to a safe distance before the circuit is completed by a switch on the battery box.

Blast Furnace, see FURNACES.

Blastoderm, the first mass of primitive cells which forms around the protoplasm in the ovum.

Blastoids (Gk. *βλαστός*, germ, bud, *είδος*, form), class of fossil echinoderms which lived in the late Palaeozoic time and are found in the Upper Silurian to the Carboniferous. They differ from most echinoderms in having no arms, and they have 8 to 10 groups of hydrospires on the radial and inter-radial plates. The calyx resembles a bud; hence the name. The genus *Pentremites* is typical of the B., and about 20 other genera have been discovered. See R. E. Etheridge and P. H. Carpenter's *Catalogue of the Blastoides in the Geological Dept. of the Brit. Museum*, 1886.

Blatchford, Robert (1851-1944), Eng. journalist, b. at Maidstone on Mar. 17, the son of an actor. After being an apprentice to brush-making, a soldier in the Dublin Fusiliers, and a clerk at Northwich, he drifted into journalism, and was connected with the *Sunday Chronicle* from 1885 to 1891. In 1891 he started the *Clarion*, and chiefly under the nom de plume of 'Nunquam,' contributed articles of a socialistic and agnostic character, which did much to popularise Socialism among Brit. working people. The simplicity and genial humour of his style made his writings popular even among those who did not share his economic and religious views. His ideals owed much to William Morris, and were but little in-

fluenced by Marxian economic theories. The death of his wife led him to acceptance of the belief in spiritualism. His pub. works include: *Merrie England*, 1894; *Tommy Atkins*, 1896; *Britain for the British*, 1902; *God and my Neighbour*, 1903; *Not Guilty, a Plea for the Bottom Dog*, 1905; and *As I Lay a-Thinking*, 1926.

Blattidae, family of insects of the order Orthoptera, which includes the cockroaches (q.v.), often improperly called black-beetles. There is a large number of species found in all lands as active and extremely voracious insects. The head is hidden by the thorax, and the antennae are long and thread-like. The common cockroach of Eng. kitchens is *Blatta* (or *Periplaneta*) *orientalis*, said to have come originally from Asia.

Blavatsky, Helena Petrovna (1831-91) (*née* Hahn), usually known as Madame B., Russian theosophist, b. at Ekaterinoslav, Russia, on July 31 (O.S.). She was married at the age of 17 years, but left her husband after 3 months, and was wont in later years to refer to the marriage as nominal only. She travelled in Asia, S. America, Africa, and India, and on returning from her travels in 1858 she declared that she had gone through an initiation into esoteric Buddhism, and could perform supernatural feats by the aid of 'mahatmas' or her spiritual tutors. In 1875 she founded the Theosophical Society, of which the objects are: (1) To form a nucleus of the Universal Brotherhood of Humanity, without distinction of race, creed, sex, caste, or colour. (2) To encourage the study of comparative religion, philosophy, and science. (3) To investigate unexplained laws of nature and the powers latent in man. Her books, which include *Isis Unveiled* (1877), *The Secret Doctrine* (1888), and *The Key to Theosophy* (1889), are a curious mixture of magical and cabalistic lore, theosophy, and more or less esoteric Buddhism. She d. in London. See THEOSOPHY.

Blavet, River, coastal riv. of France, which rises in the Landeret Hills and flows into the Atlantic at Port Louis. It crosses the B. swamp, and the Scorff R. flows into it at Lorient. The length of its course is about 87 m.

Blavia, see BLAYE.

Blaydes, Frederick Henry Marvell (1818-1908), Eng. scholar, b. at Hampton Court Green on Sept. 29; a descendant of Andrew Marvell. He was educated at St. Peter's School, York, and Oxford Univ. He took holy orders, and became vicar of Harringworth, Northants, in 1843, holding the benefice until 1886. He ed. the plays of Sophocles, and the comedies of Aristophanes, including the fragments, and also the *Agamemnon*, *Choephore*, and *Eumenides* of Aeschylus. His *Spicilegium Aristophanæum* (1902) and *Spicilegium Sophocleum* (1903) were among his best-known works. His publications exercised a distinct influence on the study of the classics at public schools during the latter part of the nineteenth century. He d. at Southsea, Sept. 7, 1908.

Blaydon, tn. in Durham, England, on the R. Tyne, 4 m. S.W. of Newcastle,

with which it is connected by a bridge. It has manufs. of bricks and bottles; lead is found in the neighbourhood, and there are collieries and iron foundries. Pop. 33,000.

Blaye (the anct. *Blavia*), tn. in the dept. of Gironde, France, on the r. b. of the Gironde, 20 m. N.N.W. of Bordeaux. It has a trade in wine, brandy, and oil. Pop. 4000.

Blayney, Andrew Thomas, Baron (1770-1834), lieutenant-general, was gazetted major of the 89th regiment, part of which he had raised himself in 1794. He joined the duke of York, who was fighting in Flanders, and experienced all the perils and misery of the retreat through Holland, 1794-95, but in many of the encounters he gained signal distinction. After assisting Lord Cornwallis in terrorising the poor Irish peasantry, 1798, he helped in the reduction of Malta. During the Peninsular war he made a disastrous descent on Málaga. In his *Narrative of a forced Journey through Spain and France as a Prisoner of War, 1810-14*, he describes his own experiences and the state of the two countries.

Blazon and **Blazonry** (derivation uncertain. Wyld gives O.F. *blason* 'shield,' later 'coat-of-arms'; but the Fr. word may come through Ger. *blasen*, 'blow' or 'proclaim'), heraldic terms which originated with the custom of blowing a trumpet to announce a knight's entrance into the lists at a tournament; the knight's coat-of-arms was explained in heraldic phraseology by the heralds who called his name. Thus blazon and blazonry came to mean the art of describing a coat-of-arms in such a way that any one who possessed a technical knowledge could accurately portray it from the description. See HERALDRY.

Bleaching, a process which involves the decomposition of colouring matter in any material, which therefore tends to become white. It is an important step in the preparation of many textiles for the market, not only for those which are required to be white, but also for coloured goods to which it is necessary to give a neutral ground before dyeing or colour printing. The B. effects of the sun's rays has been observed from the earliest times, and sunlight still plays an important part in many branches of the industry. Certain chemicals are also employed, such as chlorine, hydrogen peroxide, and sulphur dioxide. The first 2 operate as oxidising agents and the last as a reducing agent, liberating hydrogen from water. B. was undoubtedly practised amongst the early Egyptians, and the whiteness of their linens was esteemed by other nations. The Phœnicians also possessed the art, and were acquainted also with the cleansing effect of pot-ashes, or the alkalis produced from the ashes of burnt plants. In Greece, Italy, and Persia white textiles were in demand, but the mode of preparation probably did not go further than exposure to sunlight when the cloth was in a moist condition. In Great Britain it was customary up to the eighteenth century to send linen to Holland to be

bleached, whence, paradoxically, the name brown holland for unbleached linen. The Dutch process consisted in steeping the linen for sev. days in a lye of crude potashes, after which it was treated with buttermilk for some weeks. It was then spread out upon the grass in the sunshine and kept moistened. The whole process occupied sev. months, during the summer. This method was followed at bleach-works estab. in Scotland about 1730, but an improvement was instituted in 1756 by Dr. Francis Horne of Edinburgh, who suggested the use of very dilute sulphuric acid instead of buttermilk. The result was a shortening of B. process, as the souring took at most a day, and as this stage occurred about 5 or 6 times during the recurrent process, the time saved amounted to sev. weeks. The next improvement was the application of chlorine to B. The properties of this gas had been investigated by Scheele in 1774, and in 1785 Berthollet suggested its use for the purpose of breaking down colouring matter in textiles. James Watt, who was acquainted with Berthollet, introduced the process into Scotland shortly afterwards, and it soon made its way also among the Lancashire manufacturers. The form in which it was most generally used was B. powder (*q.v.*), which was introduced in 1799 by Charles Tennant, of Glasgow.

Cotton Bleaching. Raw cotton contains as impurities vegetable wax, colouring matter, seed husks, and other organic substances up to 5 per cent by weight of the material. When it has passed through the loom it is further contaminated by weaver's size, with which the warp is dressed for strengthening purpose, oil from the machinery, and other accidental impurities up to perhaps 20 per cent by weight of the material. If cotton is therefore bleached in the raw state it is sufficient to treat it first with a warm solution of soda, after which a solution of B. powder is applied; the process being completed by souring with dilute sulphuric acid. The material is washed after each stage of the process. In the case of woven goods, singeing is first employed to remove the nap, the material is then washed and afterwards boiled in milk of lime. The next stage is the 'grey sour,' when the lime is dissolved out by hydrochloric acid. The B., or 'chemicking,' follows, which means that the goods are run through B.-powder solution. There is another washing, and the goods are finally treated with dilute sulphuric acid ('white sour') and washed.

Singeing is required to produce a smooth surface, and consists in burning off the projecting fibres by passing the material through a gas flame or over a hot plate. Gas singeing is used for goods which have an uneven surface, so that all the fibres come in contact with the flame, though, of course, only for a very short time. In plate singeing the pieces, sewn together, are drawn rapidly over 2 arched copper plates heated by furnaces beneath. Roller singeing consists of allowing the sewn strip to pass round a roller which

revolves in the reverse direction. The roller is heated by a flame being drawn through the inside of the cylinder, and the advantage of the process is that the cotton is continuously brought in contact with a freshly heated surface. The grey wash is carried on in a dash-wheel washing machine, a cylindrical box of 4 divs. into which the pieces are put. The revolving of the box causes the material to dash through the water against the sides of the machine, so that the required solution is effectively carried out. The lime boil is accomplished by passing the strip of pieces through milk of lime and into a bowking kler, which is a strongly constructed cylinder capable of holding 3500 lb. of cotton. The milk of lime is forced through the material by high-pressure steam to the bottom of the cylinder. The klers are usually worked in pairs, so that the liquid can be forced from one kler to the other alternately. The lime decomposes the fatty substances in the material forming insoluble soaps which remain in the fabric after the subsequent washing. The grey sour, or treatment with sulphuric acid, dissolves out these substances, and after washing, the material is ready for chemicking, or treatment with chloride of lime in a washing-machine. The object of the white sour, or final treatment with sulphuric acid, is to dissolve out the lime in the B. powder so as to allow the chlorine to complete its B. action.

Madder Bleach. the most thorough kind of calico bleach, and in general use among calico printers. The aim is to get rid of every impurity which will attract colouring matter in the madder or other dye bath, so that the finished print may have a pure white ground. Before subjecting to the actual B. process, the preliminary operations of stamping, stitching, and singeing have to be performed. The purpose of these operations is to recognize each piece of cloth and to trace damages.

Market Bleach. In this the object is simply to impart a brilliant white appearance to calico or other similar material, so as to fit them for immediate sale as finished white goods. The operations are for the most part identical with those of the madder bleach processes.

Turkey Red Bleach is merely a curtailment of other processes, and is intended for yarn or cloth to be subsequently dyed plain alizarin red or Turkey red. In it the operation of singeing and the application of bleaching powder are omitted, because they diminish the fullness and brilliance of the red dye.

As regards all these B. processes, it may be said that there have been but few changes in the past half century, and that such slight modifications as have been introduced have always been in respect of the mechanical appliances employed.

Linen Bleaching. The same principles are utilised in linen B. as in cotton B., but the process is much more tedious, and contains many repetitions of stages, together with the employment of 'crofting,' or the exposure of the moistened

material to the action of sunlight. This prolongation of the process is due to the heavy percentage (20 per cent) of impurity in the fibre, much of it obstinate material to deal with. The fabric is so close in texture and yet so liable to deterioration from the use of drastic reagents, that the solutions employed can only take effect by constant repetition. As the 'grassing' of the linen is a prominent feature in the B. process, the industry can only be carried on away from large towns, where the discolouring substances in the air would undo the work achieved by the long exposure to light.

Wool Bleaching. Wool, as received by the manufacturer, is usually in an impure state, the unnecessary substances amounting to about 30 per cent. These consist of a natural wax coating the fibres, and known as 'yolk,' other exudations soluble in water and known as 'suint,' and the dirt which has accumulated since the last washing. The wool is treated with soap solution, which dissolves out the fat, while the water itself is sufficient to remove the other substances. The actual B. may be carried out by employing hydrogen peroxide, which, however, is somewhat expensive. Sulphur dioxide is more usually employed, either as fumes obtained from burning sulphur, or as the aqueous solution (sulphurous acid).

The bleaching of wool never forms a separate industry, as in the case of cotton and linen B.; and although in itself of minor importance, it is necessarily preceded by the operation of 'scouring,' which is of fundamental importance, both to the manufacturer and the dyer. Scouring with alkaline solutions involves steeping for sev. hrs. in tepid water, scouring for 15-30 min. with dilute alkaline solutions, and washing with water. For lower-class wools, containing a large proportion of yolk, and when cheapness is aimed at, sufficiently satisfactory results are obtained by the proper use of sodium carbonate free from caustic soda or other injurious impurity.

Silk Bleaching. Raw silk consists of the fibre proper and a gum-like substance, sericine. This latter amounts to about 20 per cent by weight, and has to be removed by treatment with a strong soap solution. It is afterwards boiled in a weaker soap solution, rinsed, and dried. The B. is often carried out, as in the case of wool, by the use of sulphurous acid. Lately, however, for tussore and fairly coarse silk, hydrogen peroxide is used. The B. of silk with hydrogen peroxide is being increasingly adopted, especially for tussore silk and other wild silks. In fact for these silks no other method of B. gives such satisfactory results.

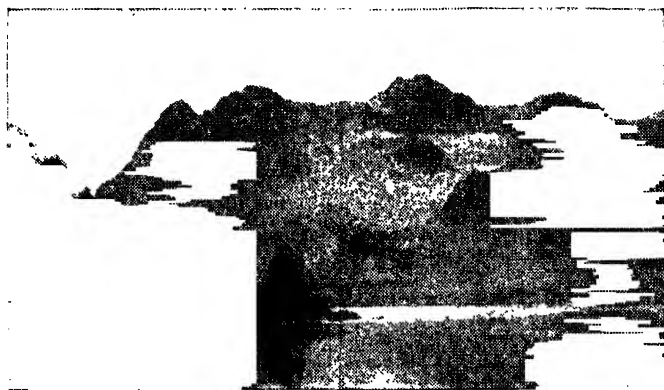
Other Material. Jute is only partially bleached, as its fibres are easily disintegrated. Hypochlorite of soda is the usual B. agent. *Hemp* may also be half-bleached by the use of B. powder or hypochlorite of soda. *Straw* used for making hats is bleached with peroxide of hydrogen while the straw is in the form of plait. As considerable discoloration takes place during the shaping of hats, a

further bleach is required, and is accomplished by treatment with sulphurous acid or hydrogen peroxide as before. *Wood* is bleached by being immersed in an alkaline solution of hydrogen peroxide. *Paper* is made of a variety of materials, including esparto grass, wood, straw, rags, etc. These are usually bleached when they are half made up by treatment with B. powder. It is necessary, however, in the case of paper to remove the chlorine thoroughly by subsequent treatment with a substance with a strong affinity for chlorine, as hyposulphate of lime. See S. H. Higgins, *Bleaching*, 1924; S. R. Trotman and E. L. Thorp, *Bleaching and Finishing of Cotton*, 1911, 1927.

Bleaching Powder, a rather dirty white powder made by the action of chlorine

fishes, in which the air-bladder opens into the gullet. The common B. *Alburnus lucidus*, is a fish with a protruding jaw and an elongated body, generally from 5 to 7 in. in length. It is common in the European rivers N. of the Alps, and occurs in large shoals. It forms a great part of the diet of such fish as the pike, trout, etc. Artificial pearls are manufactured from the coating of its scales.

Blea Tarn (Blue Tarn), name of 2 small lakes in the Eng. Lake Dist. 1. in Cumberland, on the moor between Borrowdale and Wythburn (1562 ft.); 2. in Westmorland, between Dungeon Gill and Fell Foof, the scene of Wordsworth's *Excursion*. The excursionists climbed Lingmoor from Little Langdale vil. and dropped upon B. T. 'the little lowly



BLEA TARN AND THE LANGDALE PIKES

upon slightly moist slacked lime. In Bachmann's process the lime is blown to the top of a chlorinating tower by means of compressed air, and is distributed to the highest floor of the tower through a hopper. It then falls to successive lower floors, on each of which it is mechanically raked, while a current of chlorine is driven up the tower in the opposite direction. Conditions are so adjusted that by the time the product reaches the last floor it is fully chlorinated. Hot air is now blown through it to remove free chlorine, and the B. P. falls into a hopper from which it can be delivered into containers. B. P. or 'chloride of lime' is a mixture of calcium hypochlorite, $\text{Ca}(\text{OCl})_2$, with basic calcium chloride monohydrate, $\text{CaCl}_2 \cdot \text{Ca}(\text{OH})_2 \cdot \text{H}_2\text{O}$. When treated with dilute acids it yields all its chlorine as the free gas. A good commercial sample gives 36-40 per cent of its weight of chlorine. B. P. is used in bleaching (q.v.), as a disinfectant, and to destroy mustard gas. On exposure to air it gradually deteriorates.

Bleak, fresh-water fish belonging to the Cyprinidae, in the Physostomi div. of bony

vale' from the wild table-land of the 'savage region.'

Blechnum (*B. boreale* or *Lomaria spicant*), fern of the order Polypodiaceae, native of Europe, N.E. Asia, the Canaries, and N.W. America. Popular name is the hard fern or N. fern. It resembles bracken in the fruiting, and grows best in cool, shady places.

Bleda, king of the Huns, was brother of the famous Attila. The 2 reigned together from 433 to 445, when Bleda d.

Bleeding, a discharge of blood occasioned by the rupture or cutting of arteries, veins, or capillaries. There may also be a general oozing from congested mucous surfaces, although no fissure in the walls of the vessels can be detected. Arterial B. is characterised by jerky movement and the bright scarlet colour of the fluid; in venous B. the fluid is dark purple and comes in a continuous stream; capillary B. is shown by a bright red colour and a gentle flow. The methods of stopping B. for first-aid purposes involve the elevation of the wounded part, the application of cold, and pressure by fingers or bandages at suitable points.

If the B. is arterial, pressure must be applied to the artery between the heart and the wound, and if the artery is some distance below the surface, a severe ligature is necessary. Venous B. is met by pressure directly above the wound by a pad kept in position by bandages. Internal B. is best treated by the patient lying down and wet cloths being laid over the affected part. Severe hæmorrhage is in any case dangerous, and should be treated without waiting for the arrival of the surgeon. B. as a remedial measure is seldom resorted to nowadays as compared with its continual use centuries ago. The means adopted are venesection, cupping, and leeching. *Venesection*, or the cutting of a vein, is used to relieve the general engorgement of the pulmonary vessels after a chest injury and in other cases of suffocation. To relieve the blood pressure a vein in the forearm is opened. *Cupping* means withdrawing blood by means of the reduced air pressure in a heated cup placed over a puncture in the skin. It is not now used for extensive inflammation, but for local inflammations, as in ear troubles, meningitis, etc. *Leeches* are applied over prominences where pressure can afterwards be applied to stop the B. They may either be allowed to drop off of themselves or induced to do so by the application of salt. See *VENESECTIO* or *PHLEBOTOMY*; *CUPPING*; *LEECHES*; *HÆMOPHILIA*.

Bleek, Friedrich (1793-1859), Ger. biblical critic, b. at Ahrensboök, in Holstein, on July 4. He studied theology at Kiel and Berlin. He became a tutor at the latter univ. in 1818, and was made prof. of theology in 1823. In 1829 he removed to Bonn, where he was also prof. of theology, and where he remained till his death. His chief work is his commentary on the Hebrews, which is considered to be one of the best exegetical works of the nineteenth century. His *Introduction to the Holy Scriptures* (1860-1862) and the *Lectures on the Apocalypse* (1875) were trans. into Eng.

Bleek, Wilhelm Heinrich Immanuel (1827-75), Ger. philologist, son of Friedrich B., b. at Berlin on Mar. 8. He joined Bishop Colenso in Natal in 1855, and spent some time studying the Kaffirs. He settled down at Cape Town and was made keeper of the Grey library in 1861. Here he pursued his philological investigations till his death on Aug. 17, 1875. He was instrumental in assigning the great Bantu family to its proper ethnographical position. His works include a *Handbook of African, Australian, and Polynesian Philology* (3 vols., 1858-63), and his unfinished *Comparative Grammar of South African Languages* (1869).

Blehr, Otto (1846-1926), Norwegian politician. As a Liberal, he took part in the agitation for the establishment of parl. gov. in Norway. When this had been attained in 1884, he turned his attention to the question of the separation of Norway and Sweden, and, as Prime Minister, he was leader of the movement for the peaceful settlement of that issue. From 1903 till 1917 he withdrew from

political life, but became minister of finance in 1920 and Prime Minister again in 1923. Represented Norway at the League of Nations.

Bleiberg, vil. in the prov. of Carinthia, Austria, 8 m. W. of Villach. It is situated in the valley of the Drave, near the celebrated Bleiberg (Lead Mt.). Pop. 900.

Bleibtreu, Georg (1828-92), Ger. painter, b. at Xanten, Rhenish Prussia. Pupil of Düsseldorf Academy, 1843-48, also later under Hildebrandt. In 1858 he went to Berlin, where he made his first success with scenes from the Dan. war. In 1866 he accompanied the Prussian army in the suite of Prince Frederick Charles; 1870 in that of the crown prince; 1869 member of Berlin Academy. The works for which he was celebrated consisted of battle-scenes from the wars of Frederick the Great, the Napoleonic wars, and from other wars during his lifetime.

Blekinge, prov. of Sweden, which is washed by the Baltic Sea on the E. and S. sides. It is one of the most beautiful and historically interesting parts of Sweden. It belonged to Denmark, with the exception of 1332-60, till 1648, when it was united to Sweden. The chief tn. is Karlskrona. The area of B. is 1300 sq. m. Pop. 147,000.

Bleinothra, see *SADDLEBACK*.

Blench Holding, see *BLANCH*.

Blende (Ger. *blenden*, to deceive), one of the prin. zinc ores, but, chemically, the word means a zinc sulphide. In nature it occurs both crystalline and massive, and sometimes in a soft amorphous form. In its pure state the crystals are colourless and transparent, though mostly they are coloured by traces of iron or other metals. B. generally occurs as a yellow-brown or black mineral with a somewhat resinous lustre, associated with ores of lead. Alternative names for B. are sphalerite, false galena, and black jack. Other varieties are manganese-blende, ruby-blende, and anthimony-blende.

Bléneau, vil. in the dept. of Yonne, France, situated 29 m. W.S.W. of Auxerre. It was here that Turenne gained the victory over the prince de Condé in 1652.

Blenheim: (1) Ger. *Blindheim*, vil. of Bavaria on the l. b. of the Danube, a short distance below Höchstädt. It is only remarkable as being the scene of the defeat of the Fr. and Bavarians under Tallard on Aug. 13, 1704, by the Eng., under the duke of Marlborough, allied with the Austrians under Prince Eugene. The Fr. and Bavarians lost over 30,000 killed, wounded, and prisoners, and the Allies about 12,000. Known on the Continent as the battle of Höchstädt. Pop. of B. is 800. (2) Cap. of the Marlborough dist. of New Zealand, situated on the Waeran R., near the coast, 20 m. S. of Pictou by rail.

Blenheim Spaniel, variety of miniature spaniel much like the King Charles, but it has shorter ears and differs from it in colouring, being pure white with brown and red markings. It received its name from the estate of the duke of Marlborough, where it was first bred. See also under *SPANIEL*.

Blenheim Park, the seat of the duke of Marlborough, near Woodstock, Oxfordshire. It was presented to Marlborough in acknowledgment of his victory at Blenheim during the reign of Queen Anne. It stands in the royal estate of Woodstock, which also formed part of the reward. The £500,000 voted for the presentation was found to be insufficient. Its architect was Sir John Vanbrugh, whose powers are amply proclaimed by the grandeur of the massive building, the length of whose front is 348 ft. The area of the park is 2700 ac., and its boundaries 12 m. long. The trees are said to be arranged on a plan similar to the placing of Marlborough's men at Blenheim. The R. Glyme widens into an artificial lake, and is spanned by a large bridge.

Blenker, Ludwig (1812-63), Amer. soldier, b. at Worms. After the revolution of 1849 he fled to U.S.A., and being made a general in the Federal army he fought with distinction throughout the Civil war.

Blenkinsop, John (1783-1831), Eng. engineer, b. near Leeds. He was a fore-runner of Stephenson in the development of the locomotive. His locomotive was patented in 1811, its chief feature being a cog-wheel that fitted into a toothed rail. At a test at Hunslet, Leeds, on June 24, 1812, it covered 1½ m. in 23 min., 'without the slightest accident.' B. d. at Leeds.

Blennerhassett, Harman (1765-1831), Irish-Amer., lawyer, b. in co. Kerry, Ireland; educated at Trinity College, Dublin, and called to the Irish Bar, 1790; he married his niece, and ostracised for this went to America, where B. bought an is., since called B. Is., in W. Virginia; he supported Aaron Burr in his conspiracy, and his is. was plundered by the W. Virginia militia; he went to Canada later, where he practised as a lawyer.

Blennius, or **Blenny**, name given to various species of a genus of acanthopterygious fishes of the family Blenniidae. They are littoral fishes found in all temperate and tropical seas in great variety; they are of small size and live in shoals. The blennies are distinguished by having the ventral placed before the pectoral fin, and it consists of one to three soft rays. *B. ocellaris*, butterfly blenny, is a Brit. species.

Blennorrhœa, an excessive discharge of mucus.

Blenny, see **BLENNIIUS**.

Blepsias, genus of small fishes allied to the miller's thumbs and bull-heads which inhabit the shores of N. regions. They belong to the Cottidae family of acanthopterygious fishes, and are of no food value. *B. villosus* is a native of the Aleutian Is.

Blériot, Louis (1872-1936), Fr. aviator, b. at Caubrai, July 1; trained in engineering at Ecole Centrale des Arts et Métiers. His early interest in the design of aeroplanes led him, in 1906, to open an aeroplane factory at Issy-les-Moulineaux, the first to be started in France, and he himself learnt to fly. In 1908 he flew 60 m.

in only two stages in a monoplane of his own design and manuf. A year later he was the first man to cross the Eng. Channel by air. This flight from Calais to Dover on July 25, 1909, marked an epoch in aviation. His monoplane, weighing 600 lb., with a 22-h.p. engine, covered the distance of 31 m. in 37 min. This and subsequent feats won him an international reputation. During the First World War his factory produced a number of military machines, and since the war until his death on Aug. 1, 1936 most of his energies were devoted to the improvement and manuf. of the monoplane to which he gave his name. He claimed to have built about 10,000 planes and to have designed some 200 models.

Bles, Hendrik (1480-c. 1521), Flemish artist, b. at Bonvignes. Is thought to have studied at Antwerp under Joachim Patenier, whose style he imitated. His manner is hard and dry, but his figures well drawn. He generally painted landscapes, with scriptural subjects introduced, and instead of signing his name painted an owl in one corner. He is represented in the National Gallery, London, by a 'Christ on the Cross' and a 'Magdalen.'

Blessed Virgin, Servants of the, see **SERVITES**.

Blessington, Marguerite, Countess of (1789-1849), Irish writer, daughter of Edmund Power, a small landowner, b. at Knockwist, Tipperary. She was compelled to marry Captain Farmer when she was only 14. His worthlessness caused her to leave him after 3 months. Not long after his death she married Charles Gardiner, earl of Blessington, in 1818. In 1822 she toured the Continent, and while at Genoa made the acquaintance of many distinguished men, among them Byron. This acquaintance ripened into friendship. Till 1829, the year of her husband's death, she lived in Paris, and here as in London became the leader of a world of music, art, and literature. With the fortune left her she estab. a court at Gore House, Kensington. From 1822 an acquaintanceship with the Count d'Orsay had gradually assumed a more intimate character, and later society refused to recognise her on account of their irregular union. This circumstance, and a vast accumulation of unpayable debts, forced them to abandon their responsibilities, and they crossed to Paris in 1849. During the previous 20 years she had written a number of novels of no literary value. She d. of apoplexy on June 4. Her *Conversations with Byron* had some effect in lessening the condemnatory attitude his countrymen had adopted towards him.

Bletchingley, tn. of Surrey, England, 5 m. N.E. of Reigate. Fuller's earth is raised in the neighbourhood. Pop. 2200.

Bletchley, tn. of N.E. Buckinghamshire, England, 4½ m. N.W. of London. Pop. 6600.

Bletting, first stage in the decomposition of ripe fruits, when *blots*, or rotten spots, first appear on them. Some fruits such as the medlar, are kept until they reach this stage to improve their flavour.

Blewfields, see BLUEFIELDS, RIVER.

Blewits (*Tricholoma personatus*), species of mushroom with a thick stem and violet-stained gills. It is found in the autumn.

Blicher, Steen Steensen (1782-1848), Dan. novelist and poet, b. Oct. 11, at Viborg. He was educated at Copenhagen. In 1819 he became pastor at Thorning, and in 1826 at Spendrup, Jutland. Between the years 1807-9 he trans. *Ossian*, and the appearance of *Snækklokken* (1826) and *Jyske Romanzer*, the first of his Jutland tales, earned him still greater popularity, which was, however, surpassed by his *National Noveller*, which admirably reflect country life of the period in Jutland. As a poet he is essentially national, and his works are full of tenderness and philosophic thought.

Blickling, vil. of Norfolk, Eng., near Aylesham. It is famous for its hall, which is a fine quadrangular red-brick Jacobean house, the building of which was begun by Sir Henry Hobart, Lord Chief Justice of England, who pulled down the fourteenth century manor-house, in which Anne Boleyn spent much of her childhood. The present hall was completed in 1626 by the son of the Chief Justice, who entertained Charles II. there. The W. front was rebuilt in 1729 after a fire. B. was sold by the old knight, Sir Thomas Erpingham, to Sir John Fastolf. It is now the property of Lord Lothian. B. church is a Perpendicular structure on the S. side of the B. park.

Blickling Homilies, series of sermons, so called because MS. is preserved at Blickling Hall, Norfolk. They were possibly due to religious revival and foundation of monasteries about A.D. 959, and are 19 in number, some incomplete, others only fragments, the earlier ones being regular sermons, the later largely of a narrative character based on legendary sources. Their style marks the transition between the prose of Ælfred and that of Ælfric. *St. Paul's Vision* bears some resemblance to the passage in *Beowulf* describing the groves near Grendel's home, but similar descriptions occur in many poems of the period. The homilies may be by various authors, and written at different periods, but probably they belong to the close of the tenth century. They refer to the belief that the year 1000 was to be the end of the world. Morris ed. them for Early Eng. Text Society, 1874-80. See Earle's *A.-S. Literature*, 1884.

Blidah, tn. of Algeria connected with Algiers by rail, and 32 m. S.W. of that tn. It possesses orange groves, while other products include cotton, raisins, grain, tobacco, and cork-wood. Earthquake visitations occurred in 1828 and 1867. Pop. 38,000.

Blidworth, coal-mining vil. of Notts, near Mansfield.

Bligh, William (1754-1817), Eng. admiral, b. of a Cornish family. His name is usually connected with the mutiny of the *Bounty*. He sailed with Cook on his second voyage as sailing master, and during this voyage bread fruit was discovered at Tahiti; from this discovery he received his nickname Bread-fruit Bligh.

After seeing some active service he was sent back in command of the *Bounty* to introduce the bread-fruit plant into the W. Indies from Tahiti. He stayed at Tahiti for some 6 months, and during that time his men became so demoralised that on sailing for the W. Indies his crew mutinied, and he and his officers were cast adrift. After a voyage of over 4000 m. in an open boat they managed to reach Timor. On his return to England in 1790 he was appointed to the *Providence*, and managed at last to carry out his original project. He was present at the mutiny at the *Noro* in 1797, and later fought under Duncan at Camperdown, being present also and specially mentioned at the battle of Copenhagen. In 1805 he was appointed governor of New S. Wales, but his severity led to mutiny, and for 2 years he was imprisoned. The officer who led the revolt was later brought home and cashiered. In 1811 he returned to England, and was made first a rear-admiral, and later a vice-admiral. He d. in London after a courageous but somewhat stormy career. See G. Mackaness, *Life of Vice-Admiral William Bligh*, 1936; H. V. Evatt, *Rum Rebellion*, 1938.

Blighia, genus of plants named after Captain William Bligh, R.N., belonging to the order Sapindaceæ. *B. sapida*, the akoe-tree, is the sole species, and is a native of Guinea. It is cultivated for its fruit, the aril of the seed is pulpy, and has a pleasant subacid flavour.

Blight, a disease common to cultivated plants, particularly cereals and grasses. The term has been used to cover many forms of disease, irrespective of their cause, and is specially applied to those ailments, which seize the plant before maturity.

Blighty (corruption of Hindustani *belati* from the Arabic *wilāyat*, meaning a prov. or distant country), word which came into use among the Brit. troops in the First World War, signifying the home country.

Blimbing, otherwise *Blimbi*, tree of the order Oxalidaceæ, indigenous to the E. Indies. Its refreshing, wholesome fruit justifies its extensive cultivation in the Antilles.

Blind. Blindness and Causes of Blindness. The term blindness indicates absolute loss of vision, and does not, in strict medical parlance, include that partial loss of vision or dimness which is known as amaurosis. This latter disease is a weakness of the eyes not proceeding from the cornea or the interior of the eye, but arising from diseases which, though they do ultimately paralyse the optic nerve, are not at first directly connected with it. Amaurosis chiefly affects the aged, but may be the consequence of strabismus or squint. Blindness in many cases is congenital, but results more frequently from disease, accident, and old age. The prin. inducing diseases are purulent ophthalmia, scarlet fever, catarrh, scrofula, small-pox, measles, and amaurosis. Many business occupations have an injurious effect upon the eyes, and before the almost universal prevalence

of spectacles reading small print by gaslight was among the causes of blindness. Hereditary blindness is not frequent, though it has a tendency to develop itself in families, sometimes as a result of intermarriage of close relations. Loss of vision from small-pox is now, owing to vaccination, not often met with. The majority of cases of blindness owe their origin to infantile purulent ophthalmia or inflammation of the eye, arising from inoculation at birth with some hurtful foreign substance. Medical opinion lays the greatest emphasis on the preventability of blindness from this cause, and attributes that consequence mainly to neglect and dirt. Pathologically, ophthalmia of infancy is a contagious germ disease, in the vast majority of cases curable by injecting silver salt, usually silver nitrate, into the eyes of a new-born infant. In the U.S.A., as a result of the confirmation of these facts, ophthalmia neonatorum, or inflammation of the eyes of the new-born, is a disease the existence of which must be notified at once to the proper authorities. Trachoma is also a cause of blindness. This disease, which is one of the many forms of conjunctivitis, or inflammation of the conjunctiva of the eye, is characterised by the 'granular' appearance of the inner surface of the eyelids, due to the presence of granular semi-transparent bodies, known as trachoma, or follicular granulations. Want of cleanliness is a factor in the propagation of this disease, which is commonly to be found in the eyelids of persons who live under crowded and insanitary conditions. Soldiers were formerly great sufferers, and it is recorded that hardly any of the soldiers of Napoleon's army in Egypt escaped the disease, the insanitary camp life being accentuated by the dust and dryness of the air. Glaucoma, or atrophy of the optic nerve, accounts for many cases of blindness. The disease is named from the pupil presenting a clouded aspect of a greenish colour. Most cases can be treated surgically if the operation be performed sufficiently early. In the more chronic forms, however, the operation will seldom do more than preserve what amount of sight is still retained. Sympathetic ophthalmia, or inflammation of an eye due to the injury of the other eye, is also a common cause of blindness, if the injured eye be not promptly removed. Myopia, or short sight, produced generally by too great convexity of the cornea due to over use of the eyes on minute objects, may have serious results. As a rule the defect is diminished with increasing years.

Blindness in the more active years of life is very largely avoidable. Much of it is due either to definitely dysgenic births or to the unrestricted production of children in poor or bad circumstances. About 5 per cent of the total amount of blindness is caused by accidents.

Census of the Blind. In 1851, when for the first time in this country inquiry was made into the census of the B., they were found to number 1 in 979 in Great Britain and Ireland. In 1861 there were 19,352 B. in England and Wales, or 1 B. person

to every 1037 persons; in Scotland, 2820, or 1 to 1086; and in Ireland, 6879, or 1 to 643; total, 29,248, or 1 to 994. The very high average in Ireland was ascertained to be due to the sev. outbreaks of epidemic ophthalmia in that country during the 150 years preceding 1870, and the effects of the 'epidemic constitution' so marked by the failure of the potato and the ensuing famines during the years 1845-52. In the 13 years from 1849 to 1861 the cases of ophthalmia in the workhouses, according to the Irish poor law commissioners, were little short of 200,000. For the same period the total B. in U.S.A. was only 12,631, or 1 in 2499, a remarkable figure, since the average in the temperate regions of the globe is something like 1 in 1300. The states' immunity from small-pox when that disease was rife in this country, before the days of the vaccination laws, will do no more than account for a part of this great disparity between ourselves and the U.S.A. There has, however, been a decrease in the proportion of B. to sighted persons in every census, though the rate of decrease is by no means constant. This decrease is due to a wider knowledge of the nature, means of prevention, and treatment of purulent or other forms of ophthalmia or inflammation. In 1871 the total was 21,590, i.e. 951 per 1,000,000 of pop., or 1 in 1052; in 1881, 22,832, i.e. 879 per 1,000,000 of pop., or 1 in 1138; in 1891, 23,467, i.e. 809 per 1,000,000 of pop., or 1 in 1236; in 1901, 25,317, i.e. 778 per 1,000,000 of pop., or 1 in 1285. In 1927 the League of Nations instituted inquiries as to the prevalence of blindness in the different countries of the world, and the statistics then obtained were startling. It was found that in the Brit. Isles the number of blind persons was 57,031, or about 0.12 per cent of the pop., a proportion that is exceeded by only 11 of the 36 countries for which statistics are available. Belgium showed the best return, with 0.036 per cent. By far the worst was Palestine, with 1.867 per cent, followed by Egypt with 1.219 per cent. In the U.S.A. (1920), and in Canada (1927) the proportion was 0.049 per cent; the statistics for France (1911) are 0.073 per cent, for Germany (1925) 0.058 per cent, for Italy (1911) 0.081 per cent, all considerably lower than those for the Brit. Isles.

The following are later figures for the approximate totals of blind persons for the year stated in each of the countries specified, given in order of density of blind persons per 100 of the pop., as shown: Egypt (1927), 109,600 (0.8 per cent); China (estimated), 1,300,000 (0.3 per cent); England and Wales (1943), 76,500 (0.18 per cent); Scotland (1942), 8900 (0.178 per cent); N. Ireland (1938), 2100 (0.178 per cent); India (1931), 601,400 (0.170 per cent); Eire (1935), 4400 (0.148 per cent); Japan (1935), 76,600 (0.117 per cent); Canada (1939), 10,800 (0.104 per cent); U.S.A. (1936), 114,000 (0.090 per cent); Union of S. Africa (whites, 1940), 1800 (0.083 per cent); Italy (1911), 28,000 (0.081 per cent); France (1926), 32,900 (0.080 per

cent); New Zealand (1938), 1200 (0.075 per cent); Australia (1921), 3900 (0.058 per cent); Denmark (1925), 1800 (0.052 per cent); Germany (1933), 33,200 (0.051 per cent). There are no recent figures available for many of the above-mentioned countries; and none for Russia and other populous countries. If the pop. of those countries supplying information are totalled, it is estimated that the proportion of blind persons is 180 per 100,000.

Institutions for the Blind. Before the eighteenth century there can be little doubt that no organised scientific effort for the relief of the B. ever manifested itself in the shape of responsible institutions either in this country or elsewhere. The first regularly organised establishment for the relief of the B. was the Hôpital Impérial des Quinze-Vingts in Paris, said to have been founded by St. Louis in 1260 as an asylum for 300 of his soldiers who had lost their sight in the crusades. This institution, its capacity increased, is still in existence, but no instruction was ever imparted to its B. inmates. The first successful effort in systematic instruction was made in Paris by Valentin Haüy (1745-1822), whose disgust, it is said, was so excited by the public contumely to which the more ribald elements of the Parisian common folk subjected the pauper B., that he set about devising means for rendering them, as a class, less helpless. Inspired by the success of the celebrated Abbé de l'Épée in the education of the deaf and dumb, Haüy believed that equally happy results could be effected for the B., and it seems soon to have occurred to him that the most feasible method of instruction was by means of letters formed and printed in relief. The first outcome of Haüy's efforts were, in 1784, a book for the B., and the foundation, under the patronage of the Philanthropic Society, of the Institut des Jeunes Aveugles, in Paris, organised under the immediate charge of Haüy himself. In 1786 Haüy gave an exhibition of the attainments of his 24 pupils before the king and royal family at Versailles, when the institution was placed on a more permanent footing by the royal bounty. Later, he was invited by the Russian Emperor to St. Petersburg for the purpose of founding a similar institution in that city. In 1791 the School for the Indigent B. was opened in Liverpool, its institution being due to the suggestions of a B. man named Edward Rushton. This school was speedily followed in 1793 by the Royal Blind Asylum in Edinburgh. After that the establishment of institutions for the B. occurs at intervals averaging no more than 2 or 3 years all over the United Kingdom up to 1879. The majority of them, however, are regarded primarily as asylums and not as educational establishments at all. There has been a similar progress in the U.S.A., but on a more scientific scale, for in that country every state in the Union has long since made some provision for the education of its B. In 1869 was founded in England the Brit. and Foreign Blind

Association, since 1914 known as the National Institute for the Blind, to which body and, in a lesser degree, to the Royal Normal College of Music, Norwood, and the Worcester College for the B. sons of gentlemen, were due the improvement in the methods of education of the blind.

In Great Britain there are numerous resident schools and 65 special workshops for the B. In addition there are many home teaching societies who send teachers to visit the B. in their homes and lend embossed books. The National Lending Library, founded in 1882, holds now nearly 150,000 vols. in Braille and Moon types. There are also 36 pension societies, chief among which are the Royal Blind Pension Society, Society for Granting Annuities to the Poor Adult Blind, National Blind Relief Society, Clothworkers' and Cordwainers' Companies, Hetherington's Charity, and others, while the Gardner Trust administers the income of a bequest of £300,000 left by Henry Gardner in 1879 for the relief of the blind.

The State and the Blind—The Blind Persons Act, 1920. Relations between the State and the blind, indicative of practical sympathy, are of recent development. There is no example of state monopolies being granted to the blind, but in Germany an act of 1923 made compulsory the employment of a small percentage of disabled men, including the blind, among normal workers. In France, also, a Compulsory Employment Act was passed in 1924, but only those blind persons who lost their sight in the First World War can claim benefit under it. Here and there, too, in Europe, where there are state monopolies in handling tobacco or matches, a preference in the matter of employment has been granted to the disabled, including the B. England goes no further than an official recommendation to government depts. and local authorities to give preference to goods produced by workshops for the B. The First World War, however, gave a real impetus to the movement for the emancipation of the B., and legislation which had been for years accorded only half-hearted support was speeded up. Generally speaking, however, the countries which emerge best out of the test of state responsibility for the B. are the Eng.-speaking countries. In many states of the U.S.A. state commission for the welfare of the B. have been estab., and many states grant pensions to blind persons as such. In Great Britain limited state pensions are paid, while many local services are insisted upon by the State and supported by public funds. Much of this activity may have had its beginnings before the war, but they were stimulated by the return of the blinded men from the fighting forces.

The Eng. Act of 1920 was the first attempt to provide nationally and comprehensively for all sections of the blind community. The Act falls into 2 parts. The first makes provision for pensions for practically all blind persons over 50 years of age; subject to inability to perform any work for which eyesight is needed the

blind were by this Act entitled to pension at the age of 50 on the same scale, according to means, as those to other 'non-contributory' persons at the age of 70 under the Old Age Pensions Acts 1908-1924 (Consolidated Act, 1936). The second part of the Act requires local authorities to make schemes, to be paid for jointly out of national and local funds, for the establishment of homes, hostels, and workshops, the payment of allowances to the unemployable blind, and the organization of home teaching and home workers' schemes. Generally speaking, the local authorities have operated their schemes in conjunction with voluntary agencies because the latter possess both specialised knowledge and the available voluntary services required. It may be noted that the Act, while it compels local authorities to submit schemes which they will be prepared to carry out, does not compel adherence to any particular method, but leaves the adequacy of the scheme very largely for local decision. The Act also provides for the registration of the blind persons themselves and of voluntary charities operating on behalf of the B.—the object of the latter being to give some guarantee of *bona fides* in the interests of the B. By the Blind Persons Act, 1938, the pension age was lowered from 50 to 40—thus directly benefiting some 7000 blind persons between the ages 40 and 50 in England and Wales alone—and, further, blind persons (and their dependants) were, apart from exceptional needs, removed entirely from the Poor Law (now abolished by the post-war social insurance legislation) by statutory provision which brought all local authorities on the footing of those who had already exercised their option (under the Local Government Act, 1909) by declaring their obligation to assist blind persons, in their administrative schemes, exclusively under the Act of 1920. The Ministry of Health has also appointed a standing advisory committee on blindness, including its prevention, to carry on the work hitherto undertaken by the special committee of the Union of Counties Associations for the Blind, which therefore ceased to exist in 1938.

Education and Training of the Blind. The B. can best be assisted by placing them as early as possible in the most favourable circumstances to help themselves. It is uneconomical not to give the B. the best education of its kind in the trade or profession they can best follow. It is an outworn fallacy to suppose that by a sort of law of compensation the other senses of the B. are keener than those of the seeing. The senses of hearing and touch must be developed before they can be any real substitute for sight, and the earlier such development is begun, the better for the future welfare of the B. person. The spirit of the times has for the last 60 years been opposed to the purely charitable as against the economic treatment of the B., and to the idea of increasing the size of B. asylums and thereby making ever larger demands on the public funds. For

those B. who for various reasons can never maintain themselves fully—and very few who have become B. late in life can ever do so—there will always be room for charity; but it is now recognised that most of the young B. ought to receive such an education as will fit them to become useful members of society. England, however, lagged far behind America and other countries in the practical recognition of this economic truth. An efficient system of education for the B. must be founded on an adequate course of physical development. With care the B. children can soon adapt themselves without undue risk to a number of the modes of recreation of sighted children, e.g. swimming, jumping, swings, skittle-alley, roller-skating, skipping, rowing, and so forth. A sound school curriculum should provide for classes graded to meet the requirements of various ages. When the B. child is about 14 years of age some opinion can be formed as to whether its aptitude lies in the direction of mechanical work or handicrafts, or whether it has ability in the direction of general business or even something higher. Experience shows that the chief vocations of the B. comprise organists, teachers of music (America chiefly), organ and piano tuners, basket-working, making of brushes and brooms, the making of new and remaking of old bedding, mat-making, cork-fender making, chair-caning, mattress-making, wire-making, and various forms of plaiting, of making of stereotype plates for printing Braille, telephone operating, and, more especially for women, knitting, sewing, crocheting, and the making of fancy baskets and brushes. Massage has been found very suitable work for the B., and an Institute of Massage by the Blind was formed in London. B. persons have also been known to follow successfully such professions as the Church and the law. The opening up of a musical education as a field for the B. has in some countries, notably in America, been attended with great success. The prejudice in England up to 1869 against the dotted system of reading instruction for the B., a system peculiarly favourable for musical notation, may explain England's backwardness in this respect. However, the introduction into this country of the Braille system (see below), resulted in the establishment in 1872 at Norwood of the Royal Normal College and Academy of Music for the Blind. The college embraces 3 distinct depts.: (1) General education; (2) Science and practice of music; and (3) Pianoforte tuning. Special care is bestowed on the intellectual training of the pupils, experience having proved that whatever the talent of the B. pupil for music, he will only become self-supporting where his musical training has had an adequate foundation in general education. All branches of musical instruction are given, and special attention is paid to the art of teaching. In the pianoforte tuning dept., pupils are trained who have passed the age at which they might have become qualified for profitable employment in other depts. A prolonged course of careful

training is, however, as necessary in this dept. as in the purely musical to enable the pupil to become self-supporting. In France B. organists, tuners, and teachers are trained by the Institut National des Jeunes Aveugles, and many become independent men, exercising highly lucrative professions. In the U.S.A. large numbers of B. persons become scholars and musicians. It is recognised in that country, however, that whether in the training of the B. for a musical or any other professional career, or for competition in the labour world, first-rate masters, appliances, and institutions are required, and as liberal an education as that provided by the state for sighted people. In most countries the cost of the education of the B. is met, either partially or wholly, by the State, some local authority, or a voluntary association. In regard to schools generally, it is conceded that boarding schools are more to be desired than day schools, home influence being prejudicial from the point of view of education; for the B. child is generally treated at home differently from the sighted children; a similar objection applies to the mingling in one class of B. and sighted children, the result often being that the memory of the B. child is developed at the expense of its other faculties. The habit of uniting the B. with the deaf and dumb is also unsound policy. Recreation and healthful surroundings are a *sine qua non*, but more especially in the case of those B. children whose vitality, whether congenitally or for other reasons, is lower than that of the average child.

Types and Appliances. The idea of enabling the B. to read by touch is an old one, which would naturally suggest itself to all who desired to assist them in the attainment of knowledge. The first attempts at its practical application were made as far back as the sixteenth century, but were not very successful. The pioneer in the art of stamping characters on paper in relief was Haüy, who, in printing his first book in 1784, used the italic form of the Rom. letter. In 1832 Sir Charles Lowther, obtaining some types of this kind from France, printed some parts of the Bible with his own hand. The use of the Rom. character, however, is attended with certain disadvantages, and a long controversy between its advocates and those of Fry's type, stenographic, and point systems, has resulted in the abandonment of the Rom. characters in favour either of purely arbitrary signs or of signs which in certain cases retain the crude forms of Rom. capitals. For one thing the Rom. characters were not sufficiently distinct to the touch to be easily legible by its aid alone. Hence, in 1834, Gall, of Edinburgh, introduced a new character founded upon the ordinary Rom. capitals, but with angles in lieu of curves. Alston, of Glasgow, the Rev. W. Taylor, and others, especially in America, invented and employed other modifications of the Rom. letters; but all of them, including Dr. Howe's use of small Eng. letters without

capitals and with angles for curves, are open to the same objection. They do not fulfil to the finger the promise they make to the eye. It is only with difficulty that they are mastered by those who become B. in middle life. Doubtless a few of the B., chiefly among those congenitally B. or B. from early childhood, have developed an extraordinary sensibility of touch; but acuteness of touch is not natural to the B., and can only be developed by practice, and is not to be cultivated in a high degree except by those who, being exempt from necessity for manual labour, can keep the skin of the finger tips in a condition of softness and delicacy. But even when allowance is made for increased delicacy of touch, it may still be taken as a fact that the Rom. character, in all its modifications, is read by the B. with difficulty, and the experience of American states schools was a proof of this. According to ann. reports furnished to the states legislatures in 1868, among the pupils at those schools where a Rom. letter was used, and after 5 years' instruction, one-third read fluently, one-third imperfectly, spelling the words letter by letter, and one-third failed entirely. At the Missouri Institution, on the other hand, where Braille's dotted character was employed, two-thirds of the pupils could read fluently, and one-third imperfectly, while no failures were recorded. As regards Eng. practice, Dr. Fry's alphabet of ordinary capitals without their small strokes, invented in 1832, Taylor's and Alston's books in Fry's type in 1836, were the last works in Rom. From 1838 onwards arbitrary signs came into use. Some of these are frankly shorthand—phonetic or stenographic. Others consist of rudimentary Rom. characters, or combinations of mere symbols and rudimentary Rom. capitals. The Lucas type is based upon ordinary shorthand, the signs representing the letters of the alphabet, contractions being used wherever possible. In the Frere phonetic system the signs represent vocal sounds. Both systems rendered the books printed in them cheaper and less bulky than those in which common type was used, but they presented difficulties to the uneducated adult B. Dr. Moon, himself a B. man, devised in 1847 a system in which many of the Rom. letters are retained in simplified or rudimentary forms, while those which are more complicated are replaced by Frere's simple linear signs, any infringement of the latter's system being avoided by making the purely arbitrary signs selected represent different letters from those which they are made to represent by Frere. His method has the recommendation of being easy to acquire; but the books are bulky, which makes reading a slow process, and renders the cost of production very great. In Frere's system the lines are read alternately from left to right and from right to left, the finger on reaching the end of the first line traversing a vertical arc to the right end or beginning of the next line, the letters of which are all reversed. Moon borrowed the reversal of the alternate lines

from Frere, but did not reverse the letters themselves. Moon's type is still used by home teaching societies, being, from its simplicity, more adapted to the requirements of the dull or uneducated than that which is known as the point system, and being also more easily learnt than Braille by people who have lost their sight late in life. But practically all the other 'line' types have disappeared before the advance of the 'point' or dotted system. In the transition period, however, there was much confusion, any B. person, who had painfully acquired the power of reading one system, having to repeat his

the introduction of which into this country was promoted by Dr. Armytage, of the Brit. and Foreign Blind Association, was invented by Louis Braille, pupil, and afterwards a prof., of the Institut National des Jeunes Aveugles, Paris. The basis or root form of Braille's character is furnished by 6 dots arranged in 3 horizontal pairs ::, and every letter of the alphabet is represented by the omission of something from this root form. The omissions are regulated on the most simple system. For all the first 10 letters, the 2 lower dots are omitted altogether, each letter being formed by the 2 upper

A	B	C	D	E	F	G	H	I	J
⠁	⠃	⠉	⠑	⠑	⠋	⠎	⠈	⠊	⠗
K	L	M	N	O	P	Q	R	S	T
⠋	⠃	⠍	⠎	⠕	⠏	⠑	⠒	⠓	⠔
U	V	X	Y	Z	and	for	of	the	with
⠕	⠚	⠭	⠽	⠵	⠠	⠠	⠠	⠠	⠠
ch	gh	sh	th	wh	ed	er	ou	ow	will
⠠	⠠	⠠	⠠	⠠	⠠	⠠	⠠	⠠	⠠

BRAILLE DOTTED SYSTEM

labour in order to master another, so as to be able to buy the very limited literature in embossed type on the market. In 1869, however, was formed the Brit. and Foreign Blind Association, which included among its members men of the highest ability and social standing. Five of the six gentlemen who at that time formed the executive council were totally B., and the sixth was partially so. All 6 were able to read by touch at least 3 systems, and were pledged to, or peculiarly interested in, none. The association, after extensive and persevering inquiries, came to the conclusion that the system which best met the requirements of the B. was the dotted system of M. Braille. That was introduced into the Institut des Jeunes Aveugles in 1834, and steadily grew in favour until there was scarcely a country in the civilised world in which it was not widely known and used, while at the same time a prejudiced opposition brought it about that it was scarcely heard of in the United Kingdom until 1869. The Braille dotted system,

pairs or by some further omissions from them. The next 10 letters are formed by adding the left-hand dot of the lower pair to the former combinations, e.g. B is represented by : L by : O by : and M by : and so on. The remaining letters require both dots of the lower pair. The simpler forms when standing alone represent stops, and when following a particular prefix, figures. In all there are 63 possible combinations. The same system is applied to music, and the introduction into this country of a good system of embossed musical notation lessened the difference previously existing between the prospects of B. musical pupils in this country and those of America or France. In America there were at least 2 modifications of the point type, viz. the New York point and Amer. Braille, in which the most frequently recurring letters, e.g. E, S, T, A, were represented by the least number of dots. But experiments carried out between 1905 and 1915, resulted in a modified form of Brit. Braille being adopted in the U.S.A. in 1918.

This modern Amer. Braille is known as Grade I, whereas the form of Braille used in all other Eng.-speaking countries is Grade II. For working by Braille a simple frame with a plate of zinc or other metal has been perfected. The paper is kept in position over the plate by strips of other metal, and the worker with his stylus makes the necessary indentations in the paper through the perforations in the securing bands of metal, which, besides holding the paper firm, guide the writer's hand. When a line is completed, the bands are placed lower, and the writer proceeds as before. F. Hall, the superintendent of the Jacksonville School for the B., brought out a Braille typewriter, and also a stereotype platemaker, which can be operated by B. workers, and by which thin copper plates can be embossed and the requisite number of copies printed. An automatic Braille typewriter was brought out in Germany, while Wayne, of Birmingham, constructed a cheaper Braille writer. In addition to these and kindred inventions, many boards have been made to facilitate the working out by the B. of arithmetical problems, one of the best being that introduced by the Rev. W. Taylor, containing a number of star-shaped holes, into which the student can fit a square pin in 8 different positions. The board is effective also for algebra. A newspaper in Braille, the *Braille News Summary*, is pub.-weekly by the National Institute for the Blind.

Many men, both sailors and soldiers, lost their sight during the First World War, and organisations to provide for their welfare were estab. in most of the countries concerned. This work was naturally continued after the Second World War. One of the earliest was the Eng. one of St. Dunstan's, founded by Sir Arthur Pearson, an institution which undertook with great success the training and care of men and women blinded on war service.

Some Notable Blind Persons. John, king of Bohemia, who d. fighting valiantly; Ziska, the one-eyed, who lost his remaining eye in battle, but continued to fight for Bohemia; Scapinelli, the B. philologist, and one of the most accomplished scholars of his day; Count de Pagan, who studied fortification and geometry; Dr. Nicholas Saunderson, lecturer on optics, and prof. of mathematics in Cambridge Univ.; Sir John Fielding, half-brother of the novelist, and chief magistrate of Bow Street police court; Huber, an eminent naturalist and inventor of glass bee-hives; James Holman, who is said to have travelled without an attendant through a large portion of Europe, penetrated 5000 m. into Russian dominions, performed a voyage round the world, and actually on one occasion saved the ship by taking the helm; John Milton, the poet; Dr. William Moon, inventor of the Moon type; Henry Fawcett, prof. of political economy at Cambridge Univ. and postmaster-general; Louis Braille, inventor of the Braille type; the Rev. Geo. Matheson, preacher and writer of the Church of Scotland; Prescott,

the Amer. historian; Alexandre Rodenbach, Belgian statesman; Leonhard Euler, astronomer; Sir Arthur Pearson, founder of St. Dunstan's Home for Blinded Soldiers; Sir Ian Fraser, M.P., barrister and chairman of St. Dunstan's; and Helen Keller, the Amer. blind deaf-mute, who pub. 5 books and was made LL.D. of Glasgow in 1933.

Bibliography.—B. G. Johns, *Blind People*, 1867; W. H. Levy, *Blindness and the Blind*, 1872; E. Fuchs, *Blindness, Causes and Prevention*, 1885; W. H. Illingworth, *A History of the Education of the Blind*, 1910; Dr. Best, *The Blind*, 1920; S. Dark, *The Life of Sir Arthur Pearson*, 1922; *League of Nations Report on the Welfare of the Blind*, 1929; J. M. Ritchie, *Concerning the Blind*, 1930; Sir I. Fraser, *Whereas I was blind*, 1943.

Blind, Karl (1826-1907), Ger. author and revolutionist, b. at Mannheim; educated for the law at Heidelberg. He took a sufficiently active part in the rising in S. Germany in 1848 to be condemned to imprisonment for 8 years; but his liberation by the people during his journey to Mainz prevented the execution of the sentence. Subsequently during the inevitable reaction he found himself compelled first to fly to Belgium and later to seek safety in England, where his revolutionary activities continued. The Schleswig-Holstein movement had its origin in B., who had set his efforts upon the establishment of Ger. freedom. His works are political, historical, and mythological, besides including biographies of Ledru-Rollin, Deák, and Freiligrath.

Blind, Mathilde (1841-96), Eng. poetess, *née* Cohen; she adopted the name of her stepfather, Karl B. (q.v.). At different periods she travelled in Switzerland, Egypt, and Italy, and it was her visits to Scotland that inspired her to write 2 long poems, *The Prophecy of St. Oran*, 1881, and *The Heather on Fire*, 1886, which is a passionate outcry against the Highland evictions. In her epic, *The Ascent of Man*, 1888, she handles so vast a theme as Darwin's theory of evolution. As a writer of biography she is remembered for her *George Eliot*, 1883, and *Madame Roland*, 1886, whilst she showed her gift for translation in her Eng. renderings of Strauss's *The Old Faith and New*, 1873-74, and *The Journal of Marie Bashkirtseff*, 1890. At her death she bequeathed her property to Newnham College, Cambridge.

Blindage, screen constructed of earth and timber, or other available materials, which soldiers build to protect themselves against the enemy's fire when they are in a trench.

Blindheim, *see* BLENHEIM.

Blind Spot, that part of the retina or internal nervous coating of the eyeball where the optic nerve pierces through from the rear. The nerve fibres not having spread out at this point, light falling thereon conveys no impression; so that if a small object is so placed that the rays of light from it fall only upon this area it is not perceived as being in the field of vision.

Blind-story, in Gothic architecture, name for the triforium of a church. It is directly opposed to the clerestory. It consists of a gallery situated immediately above the nave of a basilica or church. In some buildings the B. extends for the entire length of the aisle, while sometimes it is nothing more than a narrow gallery against the roof of the nave. It serves the purpose of a flying buttress to counteract the thrust of the central vault.

Blind-worm, or **Slow-worm** (*Anguis fragilis*), a wormlike creature usually about 12 in. long, of which length half is tail. Internal traces of limbs indicate its relation to the lizards, particularly those of the skink family. Its nostrils are provided with shields, while its eyes are protected by scaly and movable eyelids. It possesses long and pointed teeth which incline backwards. The colour depends upon the age and varies a great deal accordingly, but usually the adult is brown above and black underneath, while its young are white with a black stripe running along the centre of the back. They inhabit bushes and feed upon earthworms and slugs. Their bite is harmless. They are timid creatures, and their fright often causes a contraction of the muscles resulting in a rigidity so tense that endeavours to bend the creature often cause breakage. They hibernate during winter in groups of about a score.

Blinn, Holbrook (1872-1927), Amer. actor and playwright, b. at San Francisco. Educated at Stanford Univ.; appeared first in *The New South* at San Francisco and New York. Afterwards formed his own company in his native tn. Later he took his company to London, playing in *The Cat and the Cherub*, and remained in England for some years. Achieved his greatest success as Pancho Lopez in *The Bad Man*, which toured for 3 years in U.S.A.

Bloch, Ivan Stanislavovich, see BLOCH, JEAN DE.

Bliss, Arthur, Eng. musical composer, b. at Barnes, London, Aug. 2, 1891; educated at Cambridge Univ., where he studied music under Charles Wood. Also studied at the Royal College of Music under Stanford and Vaughan Williams. His *Rout*, which was performed at Salzburg in 1922, gave him a reputation on the Continent. He followed this with his *Rhapsody* (1923), which was equally successful. His style, as shown in *Colour Symphony* (1922), though modern, owes something to the Fr. influence of Debussy. His choral symphony, *Morning Heroes*, was performed in 1930. Later compositions include clarinet quintet (1932), piano concerto (1939), string quartet (1941), and music for the films, *Things to Come* (1935) and *Conquest of the Air* (1939), and for the ballet *Checkmate* (1937). B. was appointed prof. of music at the univ. of California in 1940, and for the ensuing few years he was director of music at the Brit. Broadcasting Corporation.

Bliss, Tasker Howard (1853-1930), Amer. general and diplomatist. Prof. of

military science, U.S. Naval War College, 1885-88; military attaché, Madrid, 1897-1898. Served in the Puerto Rican campaign in 1898, and proved himself an able administrator in Cuban affairs after the Hispano-Amer. war of 1898. Appointed to the Army War College Board in 1902, and, in that year negotiated the treaty of reciprocity with Cuba. In 1904-5, and again in 1915, was on the Joint Army and Navy Board. Held commands in the Philippines, 1908; assistant chief of staff in 1909. Commanded the Provisional Brigade on the Mexican border during the Mexican insurrection, 1911. From Sept. 1917 to May 1918 he was chief of the general staff in Washington. He represented the U.S.A. on the Supreme War Council in 1918, and was chosen as one of the 5 Amer. delegates to the Inter-Allied Peace Conference, in Paris, 1919. See F. Palmer, *Bliss, Peacemaker: the Life and Letters of General Tasker Howard Bliss* (New York), 1934.

Blister, a vesicle or bladder formed by the exudation of serous fluid between the epidermis and true skin, the result of a burn, friction, as in rowing, disease, or the deliberate application of a remedial agent called a vesicant. Cantharides, or Sp. fly, is the chief remedy employed as a B., and is usually applied in the form of a plaster compounded of powdered cantharides, beeswax, resin, and lard, the mixture being spread upon adhesive plaster; the liquid and colloid of cantharides act more quickly, but are not so manageable. The vesicant causes a rapid local inflammation of the skin, swelling eventually occurs, and serum appears in from 6 to 9 hrs. The effect is to withdraw the blood from neighbouring parts and thus reduce inflammation, although if the B. be too near the affected part inflammation may be increased. It is also found that quite distant parts are affected, probably because the stimulus is conveyed by the peripheral nerves to centres from which it is radiated to other nerves. In this way the surgeons of former times empirically discovered that certain areas of the skin were sympathetically connected with certain organs of the body, though probably the benefit obtained by blistering was slight.

Blister-beetle, see CANTHARIDÆ.

Blitung, or **Blitong**, see BLITTON.

Blizzard, type of storm characterised by an icy biting wind and fine snow. The suddenness of its commencement and the rapidity of the consequent fall of temp., together with the blinding snow, make a B. anticipated with dread by all who have once experienced it. Probably the most disastrous B. recorded is that of 1888, which was experienced in Dakota, Kansas, and Texas. So spontaneous was its attack that field labourers died on their way to shelter, quite as many from suffocation caused by the stifling snow as from the intense cold. Nearly 250 persons perished on that occasion. During the severity of the cold the R. Colorado was frozen to a thickness of 1 ft. Bs. are caused by the climatic conditions following the passage of cyclones across the E.

Amer. states. The term is probably onomatopoeic, owing its origin to the noise occasioned by the violence of the wind.

Bloch, Ernest (b. 1880), Swiss musical composer, b. in Geneva, of Jewish parentage; studied first under Jacques-Dalcroze (q.v.), and later in Brussels under Ysaÿe (q.v.), and at Frankfurt under Ivan Kuorr. Through the interest of Mme. Bréval, his opera *Macbeth* (1903) was produced at the Opéra-Comique in 1910. It was regarded by most critics as revolutionary. In 1910 he conducted orchestral concerts in Switzerland, and produced his first symphony. In 1913 he settled in New York as teacher at the David Mannes School of Music, and, in 1920, was made head of the newly estab. Cleveland Institute of Music. B. maintains a striking individuality among modern composers. His music is highly polychromatic, sometimes barbarous, and even cacophonous, yet touched with a tragic passion of its own. His works include the symphonic poems *Vivre et aimer* (1900) and *Hiver—Printemps* (1905), *Trois Poèmes juifs* for orchestra (1913), *Israel* (symphony), and *Schelomo: a Hebreu Rhapsody* (1918); *Concerto Grosso* (1925), and a violin concerto first performed in 1938-39.

Bloch, Jean de, or Bloch, Ivan Stanislavovich (1836-1902), Polish financier, philanthropist, and writer on economics. Of humble Jewish parentage, he was educated at the Industrial High School in Warsaw, and eventually made a fortune from his control of the railway system from the Black Sea to the Baltic. He promoted an industrial movement in Poland, becoming head of the timber and sugar trades. His book on the Russian railroads appeared in 1875, and his *Influence of Railways on the Economic Condition of Russia* in 1878. He was also a propagandist on behalf of the Jews in Europe, and gained a reputation as a writer more particularly by his book, *Is War now Impossible?*, 1898 (Eng. trans. 1899). His advocacy of universal peace was not without its influence on the Hague Convention of 1899. His pamphlet, *Lord Roberts's Campaign and its Consequences*, suggested the blockhouse scheme by which the S. African war was finally won. B. also furthered a number of scientific and philanthropic enterprises.

Bloch, Jean Richard, Fr. novelist and dramatist, b. in Paris, 1884; educated at the Lycée Condorcet and the Sorbonne. His first novel *Lévy* was pub. in 1912, but he estab. his reputation with his second novel on a Jewish theme, called *Et compagnie*, trans. *And Co.* (1918). Other novels are *La Nuit kurde*, trans. *A Night in Kurdistan* (1925), *Les Chasse de Renault* (1927), and *Sybilla* (1932). His play, *La Dernière Empereur* (1926) was performed in both Paris and Berlin, and was followed by *Offrande à la musique* (1928) and *Naissance d'une cité* (1938). He has also written a number of vols. of essays, and 2 books of travel, *Sur un cargo* (1924) and *Cacahuètes et bananes* (1927).

Bloch, Karl Henrik (Heinrich) (1834-1890), Dan. painter, b. at Copenhagen. He

studied at Copenhagen Academy, went to Italy 1852-65, gaining a scholarship for Rome 1859. He first won a reputation for nature studies, especially those drawn from Jutland and Zealand, and for humorous pictures. His chief works are, however, historical. He won a first-class medal and the decoration of the Legion of Honour at the Universal Exhibition, 1878. In 1883 B. became prof. in Copenhagen Academy, and prof. at the school of Beaux-Arts. B. painted 2 pictures for the oratory of Frederiksborg, 'Visit of Mary to Elizabeth,' and 'Jesus Christ healing a Blind Man.' Other works are: 'Peasant's Cottage,' 1858; 'Fisherman's Family on Shore'; 'Repast'; 'Fisherman from Sorrento' (Copenhagen Gallery); 'Two Monks,' 1862; 'Roman Street Barber'; 'Prometheus'; 'Daughter of Jairus'; 'Samson and Delilah'; 'James of Scotland visiting Tycho Brahe'; 'Christian II. in Prison at Sonderburg,' 1871; 'Hans Tawson protecting Bishop Rönnow,' and 2 frescoes in Copenhagen Univ. See Muther, *History of Modern Painting*, 1895-96.

Bloch, Marcus Eliezer (c. 1723-99), Ger. ichthyologist, by profession a physician. His *Allgemeine Naturgeschichte der Fische*, 1782-95, is the earliest standard work on ichthyology. Although he followed the arrangement of Linnaeus, he estab. 19 new genera and 176 fresh species.

Blochmann, Henry Ferdinand (1838-1878), orientalist, studied E. languages at Leipzig and Paris. Enlisting as a private in the Brit. Army in order to have opportunities of living in India to study the languages *in situ*, he later secured the assistant professorship of Arabic and Persian at the Calcutta Madrasa. B. passed most of his life at the Madrasa, where he became prin. His prin. writings are his detailed *Contributions to the History and Geography of Bengal* and his faithful translation of the *Ain-i-Akbari* of Abul-Fazl (first vol. only), the notes of which give a picture of the Emperor Akbar and his court.

Bloch, see PULLEY.

Block, Maurice (1816-1901), Fr. statistician, b. on Feb. 18, of Jewish descent. He was naturalised at Paris after the completion of his studies at Bonn and Giessen. He entered the Fr. ministry in 1846 in the agric. dept., and in 1852 he was appointed a member of the statistical office. After his retirement from office in 1862 he devoted himself to the compilation of statistics. In 1880 he was elected a member of the Académie des Sciences Morales et Politiques. Among his works are: *Dictionnaire de l'administration française*, 1856; *Statistique de la France*, 1860; *Dictionnaire générale de la politique*, 1862; *L'Europe politique et sociale*, 1869; and *Annuaire de l'économie politique et de la statistique*.

Blockade, term used in both military and maritime warfare. In military warfare it meant an operation used in the place of a siege or bombardment, and consisted of an attempt to cut off a hostile tn. from all outside communications and supplies. In the military sense,

therefore, a B. consisted in the possession by a military force of all means of entrance into and exit from the tn. The examples of the B. of Paris and of Metz in the Franco-Prussian war of 1870-71 may be mentioned, although the former after being blockaded also underwent bombardment. Naval B., which is usually meant when reference is made to B., is different in many essentials from military B. Originally naval B. must have been the equivalent of military B., that is, a port which was blockaded was as effectually cut off as a tn. surrounded by a military B., and even in more modern times a naval B. was often only the naval supplement to a land siege. But quickly a differentiation must have grown up between naval and military B., since obviously it would be an open act of war for a neutral to attempt to cross the lines of a blockading army, whereas a neutral ship might attempt to enter a B. port with no knowledge that a B. was taking place and in the best of faith. So in the course of time the rights of neutrals came to be recognised, and notice was given to neutral powers of the state of B. But this in itself led to abuse: a power would notify a certain port as in a state of B. before the actual B. had taken place, and this ridiculous system reached its highest point in the huge paper B. of Napoleon's continental system and Great Britain's reply in the Orders in Council. The futility of the continental system, which forbade France or France's allies to have communication with Britain, was obvious in that Napoleon himself was dependent upon Britain for a great part of his supplies. America, as the neutral nation which really suffered most, protested strongly against this system. In the early part of the nineteenth century Great Britain and the U.S.A. asserted that in order that a B. should be binding it should also be effective, and in 1856 by the Declaration of Paris it was declared that 'Bs. in order to be binding must be effective, that is to say, maintained by a force sufficient really to prevent access to the coast of an enemy.' Pacific B. gave rise to much protest from neutral nations, as, for example, in the B. of the Venezuelan ports by Great Britain, Germany, and Italy in 1902-3, so that it was soon thereafter practically recognised that the right of B. was of a necessity a belligerent right. It was recognised also that if a blockading vessel abandoned its position save under stress of weather, if it were driven away by the enemy, or if it broke the article, 'a B. must be applied impartially to the ships of all nations,' the B. ceased to be effective. The law as applied to the position of neutral vessels is, that neutral vessels are entitled to notification before they can be seized for violation of the B.; that this notification may be made by one of the blockading vessels, by proclamation or by notoriety. It is, however, usually recognised also that if a vessel shall have had notice in any way and attempts to violate the B., she is a good prize, but if such notice is not formal but arises from notoriety, then the rule shall be as

leniently construed as possible. Amongst the subjects dealt with at The Hague Conference in 1908-9 was B., and a number of rules dealing with this subject were formulated.

Blockade in the First World War. Germany, far from being a self-supporting country, depended upon overseas imports for adequate food and clothing and, to a certain extent, munitions of war. Her problem during the First World War was to obtain these supplies while the seas were controlled by the Brit. Navy, and while on land her ter. was partly closed by hostile countries. She was fortunate, however, in having neutral neighbours who were the cause of most of the work entailed in carrying on the economic war against her. This economic war did not conform to the estab. idea of a B., in that it was not a cordon of ships placed round the coast so much as a denial of the use of the sea anywhere as a route for supplies. The only way to raise this B. was to defeat the Brit. Navy and thereby ensure safe conduct for supplies, and Germany failed to achieve this object. In considering the question of B., the changed status of the civil pop. in a modern major war must be taken into account, together with the progress in transport. Before the First World War the civil pop. and the armed forces at war were 2 distinct entities, the life of the former having little bearing upon the efficiency of the latter. That was mainly due to the fact that previous wars were, comparatively, small, and did not in the case, at least, of Great Britain, involve the nation as a whole. But during the First World War the greater number of civilians were either directly or indirectly serving a military arm or supplying the needs of those who were thus engaged, so that one purpose of maintaining the civil pop. at home was to ensure the maintenance of the armies in the field. At the beginning of the war the Declaration of London (1909), though unratified by Great Britain, was recognised as the international code governing B. During a war neutral countries have a right to carry on trade between each other and, in the case of non-contraband goods, with the belligerent powers or states. But, according to the Declaration of London, goods that are 'absolute contraband' (i.e. munitions and warlike stores) are liable to capture by the blockading power, 'when the goods are documented for discharge in an enemy port, or for delivery to the armed forces of the enemy,' and also 'when the vessel is to call at enemy ports only, or when she is to touch at an enemy port or meet the armed forces of the enemy before reaching the neutral port for which the goods in question are documented.' 'Conditional contraband is liable to capture if it is shown to be destined for the use of the armed forces or of a gov. dept. of the enemy state.' One of the doctrines which has grown out of the rules connected with B. is that of 'continuous voyage'—that is to say, that if it can be proved that contraband goods are ultimately intended for the use of the

enemy state being blockaded they are liable to seizure, though carried in ships of a neutral country, and notwithstanding the fact that the latter part of the journey may be overland. It will therefore be seen that 'conditional contraband' goods could, under the Declaration of London, reach the enemy by first being discharged in a neutral port by the vessel of a neutral country, but were liable to seizure under the doctrine of 'continuous voyage' if ultimate destination to the enemy were proved. At the opening of the war only the ineffective terms of the Declaration of London were applied to contraband, and Germany was therefore able to obtain adequate supplies through Scandinavia and Denmark. In this connection Germany was favourably situated, for supplies from Denmark were not liable to seizure by the allied fleets and those from Scandinavia could be transported in safety via the Baltic. The inadequacy of the terms of the Declaration of London was soon apparent, but it was not until Mar. 1915 that more restrictive measures were applied. This took the form of a general B., under which, in the terms of the 'Reprisals Order,' no merchant vessel which sailed from her port of departure after Mar. 1, 1915, was allowed to proceed to a Ger. port, or if she sailed from a Ger. port after that date she was not allowed to proceed on her voyage; and after that date any merchant vessel which had goods intended for the enemy, or were enemy property, were required to discharge them at an allied port. This order also abolished the distinctions 'absolute' and 'conditional' contraband. The test now was the destination or the origin of the goods. Strictly speaking, this was not a B. According to the Declaration of London, 'a blockade must not extend beyond the ports and coasts belonging to or occupied by the enemy' (Article 1) and 'the blockading force must not bar access to neutral ports or coasts' (Article 18). This action of the Brit. Gov. roused Amer. opposition, but Sir Edward Grey replied that no principle of international law had been violated by applying a B. in the only way in which it could be effective in cutting off the enemy's commerce with foreign countries through neutral ports. Eventually, on July 7, 1916, by an Order in Council, the Brit. Gov. informed neutral countries that as the conditions of war had changed from those which obtained when the Declaration of London was drawn up the declaration would be withdrawn and its provisions disregarded in the economic war against Germany.

As the economic war proceeded new problems constantly arose so that it was found necessary to set up a separate ministry, and in Feb. 1916 a Ministry of B. was created, with Lord Robert Cecil (subsequently Lord Chelwood) as minister with a seat in the Cabinet. One of the first acts of the new ministry was to limit imports to neutral countries to their pre-war proportions, thus ensuring, to some extent, that they were not transferred to Germany. The Ministry of B. came to an end in June 1919.

Germany's effort to defeat the stranglehold of the Brit. Navy did not begin seriously until her submarine campaign in Oct. 1914, which met at first with a fair measure of success. Von Spee's annihilation of Cradock's squadron off Coronel in Nov. 1914 lent them additional encouragement. In these successes they saw a possibility of the trades routes being once more open to them, and the slur on their navy, which the existence of a B. implied, removed. But a month later their hopes had a serious setback when Admiral Sturdee destroyed Von Spee's fleet off the Falkland Is. (q.v.). This action deprived Germany of all naval power outside her own waters, and the possibility of regaining overseas trade vanished. In spite of the vigilance of the Brit. fleet, the Ger. raider *Moeve* ran the gauntlet in Jan. 1916 and laid mines to the W. of the Orkneys, which caused the loss of a Brit. battleship. Another raider, the *Greif*, came out, but was sunk. The *Moeve* got safely back to port, after doing considerable damage. Later in the year she took to sea again, and another raider, the *Wolf*, was also successful in getting out. The submarine *Deutschland* also made successful trading trips to America, and *U 53* crossed the Atlantic and did considerable damage to merchantmen. These were, however, but isolated successes, and on Feb. 1, 1917, Germany began her 'unrestricted submarine warfare,' by which it was hoped to ruin England's food supply. This misconceived action of sinking vessels without notice contributed to ranging U.S.A. on the side of the Entente owing to numerous casualties among Amer. citizens, and, indirectly Germany's answer to the B. eventually brought about her defeat on the W. front. With the U.S.A. in the war against her, Germany's hope of regaining control of the trade routes or of removing the economic pressure exerted by her enemies, vanished, and with it the need of unremitting vigilance by the Brit. warships. That the Brit. Navy made the B. effective seems beyond doubt inasmuch as only a few Ger. vessels were able to get through and return.

Blockade in the Second World War. The effectiveness of B. was one of the most important lessons from the First World War, and its importance was increased in total war. Hence immediately the Second World War started, plans were made to revive and improve the methods that had been developed in 1914-18. A ministry of economic warfare (q.v.) was instituted in Britain. The list of absolute contraband (q.v.) issued by the ministry, included not only arms and munitions, but fuel, transport machines, and animals, articles of communication, coin and bullion, etc.; and conditional contraband, which might be seized if destined for the Ger. Gov. or its forces, comprised all kinds of food, forage, clothing, and articles and materials used in their production. The effectiveness of the B. is revealed by the statistics, for during the first month of the war Britain captured 150,000 tons more merchandise than she lost through U-boat

attacks. Thus the maritime B. of Germany was one of the chief weapons of the Allies from the beginning, and therefore command of the sea was vital. In this economic warfare the neutral countries occupied a position of the first importance, for they could be the means whereby Germany could deliver a deadly economic flanking attack, *e.g.* by obtaining unlimited iron-ore supplies from Sweden. Hence the W. neutral countries were under strong diplomatic pressure from both sides from the start of the war. As regards Amer. supplies, President Roosevelt improved the Allies' position in 1939-40 by the Act of Nov. 4, 1939, which replaced the ban on supplies by the principle of 'cash and carry,' adopted for sales to all belligerents. Under this Act no arms could be carried to any belligerent in Amer. ships, and Amer. ships were not allowed to enter the war zone and so were not available to the Allies, but there was the compensating factor that this very provision was likely to prevent any major Amer. grievances from developing, as in the previous world war, against the Allied B. Of course Allied shipping was hampered and neutral shipping endangered by the violence of Ger. methods of sea warfare; but Ger. shipping was swept from the seas. The prin. route left open to Ger. shipping was along the Norwegian coast, but the daring of Brit. destroyers and submarines imposed a strong veto on this route. By 1940 the B. was being extended further afield. It was found that foods were being shipped to Germany via Vladivostok, and that Germany had made overtures to the Soviet and Japan for U-boat bases in the Pacific; hence allied naval counter-measures were taken in the Far East. By the spring of 1940 the economic pressure on Germany was tightened still more. For the Allies were not inclined to allow the maintenance of legal neutrality by the small nations to operate in practice to the advantage of Germany. They employed, however, none but legal means to diminish this advantage, *e.g.* by an extensive purchasing policy designed to withhold neutral products from Germany. New trade treaties were made which provided that the countries concerned should voluntarily limit their imports to prevent them from acting as mere channels of supply to Germany. But it was made clear that if the neutral country did not take this action voluntarily, it would be imposed on it by the allied B. It was clear by June 1940 that Britain's command of the sea could not be seriously disputed by any naval means in the power of the Axis. Only by air supremacy could they hope to challenge Brit. sea power—hence the launching of daily air raids on Britain. But the extension of the field of Ger. conquest in 1940 seriously increased the problem of Britain's maintenance of the B. For it gave Germany greater resources, while the downfall of France gravely diminished the blockading forces. The burden now fell on Britain alone; though the very fact that there were now fewer neutral prejudices or

susceptibilities to consider was in itself an allied asset. The B. was also applied to France after the armistice of 1940. The unoccupied regions of France, as well as Spain, were subjected to import rationing at Britain's discretion. An extension of the navicert system at the end of July imposed even stricter control; and the stranglehold by sea was powerfully supported by the activities of the R.A.F.

The Ger. submarine B. of the Allies was on a far greater scale than in the First World War. Germany's surface raiders in the Atlantic were easily disposed of, but the Gers. turned out submarines by mass-production much faster than the Allies could sink them, and their submarine fleet had by 1942 reached dimensions threatening the very existence of the transatlantic life-line. As compared with the position in 1918 the Allies were seriously handicapped by their deprivation of bases in N. and W. Ireland, and, indeed, had the is. been united and no part of it available to them as a bridge-head, the war might have been greatly prolonged. The damage was all the greater because the Gers. then had airfields in France nearly as far W. as any in Britain, and their method was to send aircraft far out into the Atlantic, whence they wirelessly to their U-boat packs the position and direction of allied convoys. But various means were found to counteract this peril, *e.g.* by the application of mass-production to shipbuilding (see SHIPS AND SHIPBUILDING), and by the development of radiolocation (*q.v.*); and the last stage of all came in Oct. 1943, when Portugal agreed to allow the Allies to use bases in the Azores, thereby enabling convoys, especially in winter, to take more southerly routes. Among ships sailing in the main Atlantic and United Kingdom coastal convoys the proportion lost in 1941 was no less than 1 in 191; in 1942 it was 1 in 233; in 1943 it dropped to 1 in 344, and in the last 6 months of 1943 it was 1 in 1000. See also NAVAL OPERATIONS IN SECOND WORLD WAR.

Block-books. Xylography, or printing from engraved wooden blocks, is said to have been practised in China 5 centuries before it was known in Europe. Early in the fifteenth century, many books, mostly religious, were printed in the Netherlands and in Germany by this process. As a rule, each page was mainly occupied by an illustration, with a few explanatory words appended, but sometimes whole pages of text were engraved. It is not certainly known whether the books were printed by rubbing the back of the paper, when placed on the block, or whether a primitive type of press was used. One side only of the paper was printed on, and two blank sides were then pasted together. Hard wood was generally used, but before Gutenberg's time copper also had come into vogue. One of the best-known series of B. was the *Biblia Pauperum* (*q.v.*). About 1428 Laurens Coster of Haarlem printed an ed. of the *Speculum Humanae Salvationis*, each page half picture, half text; the excellence of the latter (cut of course in reverse) is remarkable.

Block-buster, popular name for 12,000-lb. bomb used by the R.A.F. in the Second World War, and so named because it was an obliteration bomb which caused whole blocks of buildings to disintegrate. Like the earlier 1000-pounders, it was constructed on the principle that a large bomb could be made much more destructive with a thin casing and a heavy weight of explosives, relying on the effect of blast rather than that of fragmentation. But whereas the explosive content of the first 1000-pounders was only 30 per cent of the total weight, that of the later 8000-lb. bombs was no less than 75 per cent, and the B. was built on the same lines, the cover being a mere shell. Experiments and trials went on through 1940 with 4000-lb. bombs and the problem was solved of getting the whole charge to explode simultaneously. Early in 1941 experiments were made with 8000-pounders, and this bomb held its place for a year. Experiments with 12,000-pounders occupied 8 months more before the ballistic specialists were satisfied with the tail-piece, length, etc. The Bs. were made in Black-Country blast furnaces, the steel for which comes from that part of the country. The bomb casings were made in 4 sections—the tail-piece and 3 explosive sections, the head, the centre section, and the end all 3 containing nearly 4000 lb. of explosive charge. From the blast furnaces the bombs were sent to a Royal Ordnance filling factory, but the name of the explosive used is an official secret. The first Bs. used were those dropped on the Limoges factory where the Gers. were making tanks, and production at the factory ceased immediately. After that they were carried repeatedly by Lancaster aircraft; thus the Kembs dam on the Rhine was breached by delayed-action Bs. on Oct. 7, 1944, and on Nov. 12 of the same year the 45,000-ton Ger. battleship *Tirpitz* was sunk in Tromsø Fjord by Bs.

Blockhouse, a small fortified defensive building, constructed in isolated places to command a large area. The B. was garrisoned by a few troops who were able to deal with greater numbers of the enemy owing to the protection afforded by the B. They were used in the S. African war, 1899–1902, for the final drive against the Boers. In this case lines of Bs. were connected by wire entanglements. In the eighteenth century Bs. were mounted upon rollers or on flat-bottomed boats to give them portability on land or on rivers or lakes. See BLOCH, JEAN DE.

Blocking Course, a technical term applied in architecture to the course of stones or bricks placed above the cornice to make a termination.

Block Island, an is. in the Atlantic Ocean, 9 m. off the S. coast of the state of Rhode Is., U.S.A., forming part of the co. of Newport. Its greatest length from N. to S. is 6 m. On its W. coast stands New Shoreham, a popular summer resort. The light on the S.E. coast can be seen for over 20 m.

Blocksberg, see BROCKEN.

Blockship, a vessel filled with concrete and sunk so as to block a harbour, channel, or fairway. In the 1914–18 war, Bs. were sunk at Portland and other naval harbours, so as to keep out the Ger. submarines. A number of obsolete cruisers were used as Bs. In the Brit. raids on Zeebrugge and Ostend in 1918.

Block System, see RAILWAYS.

Blockx, Jan (1851–1912), Belgian musical composer, b. at Antwerp, Jan 25, son of an upholsterer. He learned music as a church chorister, and later entered the Antwerp School of Music under Benoit (*q.v.*). He studied under Reinecke at Leipzig in 1879. In 1886 he became prof. at the Antwerp School of Music, and succeeded Benoit as director in 1901. His artistic mission was to transfer Benoit's popular style to the stage, and to give voice to the national folklore. Besides cantatas and operas, he also wrote some instrumental music. Stage works include: *Maitre Martin*, 1892; *Herberg-prinses*, 1896; *Thyl Ulenspiegel*, 1900; *De Bruid der Zee*, 1901; *Baldie*, 1908 (re-written as *Liefdelied* in 1912). Cantatas: *De Klokke Roeland*, *Het Vaderland*, *Feest in den Lande*, *Jubelgalm*. Of his songs *Ons Vaderland* became most popular.

Bloemaert, Abraham (1564–1651), Dutch painter, b. at Gorkum. He started his career while very young, and became a pupil of Joost de Beer. He studied at Paris, and later worked at Amsterdam and Utrecht, where he d. He is chiefly known for his landscapes, his fame resting both on the brilliance of his colouring and on his representation of chiaroscuro. He had 4 sons; Cornelis, the youngest, was noted as an engraver.

Bloemfontein, cap. of the Orange Free State, was founded in 1846, and in 1880 was declared a municipality. It is situated at a height of 4518 ft. above sea-level on the R. Modder. It is connected by rail with Kimberley, Cape Town, Port Elizabeth, and Johannesburg. Among its public buildings are the Raadsaal, formerly the meeting-place of the Orange Free State Raad, now the seat of the provincial council, an Anglican cathedral, a large Dutch Reformed church, a State museum, and a public library. The tn. hall was completed in 1937. It is noted for its live-stock market, the largest in S.A. Though its manufs. are few, its trade is very extensive. Its dry, healthy climate makes it a favourite resort of invalids. Eng. is the common tongue. The pop. is 65,000, of whom 30,000 are Europeans. Lord Roberts occupied the place during the Boer war of 1899–1902. It was chosen as the seat of the Supreme Court of S. Africa in 1910, upon the formal declaration of its recognition as a province of the Union of S. Africa. Owing to its position (it is known as the Centre City), it is frequently used as a meeting place for delegates from all provinces of the Union. It is an important educational centre, about 4000 students being accommodated. Grey Univ. College has, since 1916, been a constituent college of the univ. of S.A.

Blois, the cap. of the dept. of Loir-et-Cher, France. It is situated mainly upon the r. b. of the Loire. The tn. is of 2 parts, anct. and modern. The former occupies a position upon a hill, while the latter is nearer the riv. The newer portion has fine quay. Its magnificent old castle and its many historical associations give the tn. additional interest. Its manufs. are chiefly porcelain and gloves, and its trade in brandy, wine, and timber is increasing. Pop. 24,000.

Blois, Peter of, see PETER OF BLOIS.

Blok, Alexander (1880-1921), Russian poet. He began his literary career in 1905 with *Poems of the Beautiful Lady*. They were a boy's poems, filled with

most famous of the post-revolutionary writers.

Blok, Petrus Johannes (or Pieter Johann) (1855-1929), Dutch historian, b. at Helder; studied at Leyden; prof. of hist. at Groningen, 1884; at Leyden, 1894; directed historical studies of Queen Wilhelmina. His special study was social-political hist. of Netherlands in the Middle Ages. Works: *Eene Hollandse stad in de middeleeuwen*, 1883; *Geschiedenis van het Nederlandsche Volk*, 1892-1901 (trans. as *History of the People of the Netherlands*, 1898); *Relazione veneziane: Venetiaansche berichten over de Vereenigde Nederlanden van 1600-1795*, 1909; *Willem de eerste, Prins van Oranje*, 1919-20;



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adoration of the ideal woman. Sev. more vols. in the same strain followed. Then came a reaction. He wrote a series of poems in which he bitterly mocked at his former self and his former ideals. He said the blood he had wished to shed for his beautiful lady was only lemonade. His poems were devoted to pictures of city squares filled with human wreckage and of restaurants crowded with drunken people. This bitter fruit was gathered up in *Nocturnal Hours*, in 1911. The outbreak of the First World War gave his genius a new phase. He became filled with love of his country. In 1918 he pub. *The Twelve*, the only poem inspired by the revolution of 1917 which has been both acclaimed by his own people and considered worthy of being trans. into almost every modern language. Although quite short, it has been called a little epic. It is the story of 12 Red Guards. Its hero is an assassin, Vanka, its heroine a prostitute, Katka. The argot of the soldiers is mingled with classic Russian, fragments of popular songs with free verse. His funeral in Aug. 1921 in Leningrad was the occasion of a public demonstration, and his coffin was carried through the streets by some of the

Frederik Hendrik, Prins van Oranje, 1924; *Michiel Adriaan zoon de Ruyter*, 1928.

Blomberg, Werner Eduard Fritz, Baron von (1878-1946), Ger. field marshal. After serving as a staff officer during the war of 1914-18, he entered the Reichswehr Ministry in connection with the work of Ger. disarmament. He was, however, associated with Gen. von Fritsch in building up a secret army in Germany in contravention of the Treaty of Versailles. When Hitler came to power B. became minister of war, but he never secured Hitler's full support. He had, in consequence, to resign from the Ministry of War in 1938, as a result of the unpopularity of his second marriage. He d. from heart failure at Nuremberg on Mar. 13.

Blomefield, Francis (1705-52), Eng. topographer, b. at Fersfield, Norfolk, England. He is known principally by his work, *An Essay Towards a Topographical History of the County of Norfolk* (1739-75), which gives extensive information concerning his native co. He did not live to complete it, however. It was continued by C. Parkin, who pub. it in 5 vols. From 1805 to 1810 it was again pub. in 11 vols.

Blomefield, Leonard (1800-93), Eng.

naturalist, formerly Leonard Jenyns, was educated at Eton and St. John's, Cambridge. In 1835 he pub. his excellent *Manual of British Vertebrate Animals*, the ornithological sections of which have been selected for special praise. From 1828 to 1849 he was vicar of Swaffham Bulbeck, Cambs., and, although the chair of zoology at his own univ. was offered him, he refused to give up his parochial work. In 1860 he settled at Bath, to which tn. he presented the Jenyns Library, which contained 2000 vols. dealing mostly with natural hist., and also his fine herbarium of Brit. plants. He was the first president of the Bath Natural Hist. Club.

Blomefield, Sir Thomas (1744-1822), Brit. general and colonel-commandant of the Royal Artillery, was with Admiral Hawke's fleet at Quiberon, served in the W. Indies at the capture of Martinique and Havana, and became in 1771 aide-de-camp to General Conway. As brigadier-major he constructed floating batteries on the Canadian lakes: he was wounded at Saratoga. In 1779 he was appointed superintendent of the Royal Brass Foundry, in which capacity he carried out much-needed reforms, substituting cast-iron and brass guns for the inferior ordnance he was obliged to condemn. In the expedition against Copenhagen in 1807 he distinguished himself by his command of the artillery, and from 1779 to his death made full use of his scientific experiments in gunnery in his work as Inspector of artillery.

Blomfield, Sir Arthur William (1829-1899), Eng. architect; educated at Rugby and Trinity College, Cambridge. In 1861 he was elected president of the Architectural Association. It was as architect to the Bank of England that he designed and built the law courts branch in Fleet Street. This is his most notable achievement, but he also designed and restored many churches and schools. The rebuilding of the nave and S. transept of St. Saviour's, Southwark, in revived Gothic style, and the entire S. porch was carried out under his supervision, whilst his work may also be seen in Salisbury and Canterbury Cathedrals. Other of his productions are King's School, Chester, the museum at Charterhouse, Godalming, the Royal College of Music, and the church of St. Barnabas, Oxford, the last in an It. style.

Blomfield, Charles James (1786-1857), Eng. bishop; son of a schoolmaster at Bury St. Edmunds. From his father's school he proceeded to Trinity College, Cambridge, of which he became a fellow in 1809. In 1810 he took holy orders and became incumbent of St. Botolph's, Bishopsgate, 9 years later. In 1822 he was appointed archdeacon of Colchester. He was ordained bishop of Chester in 1824, from which place, after holding office for 4 years, he was translated to London. As a classical scholar he possesses some standing, and his eds. of Æschylus, Callimachus, and Euripides are erudite and scholarly. His work as an ecclesiastic was active and thorough.

One of his objects was the building of additional churches. He personally superintended the organisation of a scheme to build 50 simultaneously.

Blomfield, Sir Reginald Theodore (1856-1942), Eng. architect, b. at Aldingham, Kent, where his father was rector; educated at Hailbury and Exeter College, Oxford. His mother was also a Blomfield (daughter of the bishop); and her brother, Sir Arthur Blomfield, was Reginald's master for 3 years. He also studied at the Royal Academy Schools, where he was a prizeman, and began practice in 1884. Of his many works the designs for the Menin Gate, the completion of the Quadrant, Regent Street, and Lambeth Bridge (completed 1932) are among the best known. He also designed many country houses; largely reconstructed and restored the interior of Chequers Court; and built Lady Margaret Hall at Oxford, the Sherborn School buildings, the Whitley School, Chichester, and the Lincoln Free Library. Under the auspices of the Imperial War Graves Commission he designed the well-known 'cross of sacrifice,' with its bronze sword, which has become the pattern for so many war memorials in Britain. London has much of his work: the United Univ. Club (1908); the 'Paul's Cross' in the N.E. angle of St. Paul's Churchyard, which is not a cross, but a column bearing a bronze figure of St. Paul (1910); the Carlton Club; and the R.A.F. Memorial on the Embankment. He also pub. many books on architecture, some of which are standard works: *Formal Gardens in England*, 1892; *History of Renaissance Architecture in England* (a complete account covering the period 1500-1800); *History of French Architecture, 1494-1661*, 1911; *History of French Architecture, 1661-1774*, 1921; also *Studies in Architecture; Memoirs of an Architect*, 1932; *The Mistress Art; Modernism*, 1934; *Six Architects*, 1935; *Life of R. Norman Shaw*, 1940. A.R.A., 1904; R.A., 1914. Gold medal for Architecture, 1913. President of the R.I.B.A., 1912-14.

Blommaert, Philip (1808-71), Flemish author, b. at Ghent. In collaboration with Conscience he worked to secure the revival of the Flemish language. His eds. of *Theophilus* in 1836, a Flemish poem of the fourteenth century, and *Oudplaasche Gedichten* in 1851 earned him fame as an anti-Fr. zealot. But his greatest work is his hist. of the Belgians (1849).

Blommers, Bernardus Johannes (1845-1914), Dutch painter, b. at The Hague. He painted interiors, landscapes, and scenes of humble life. His pictures have great beauty of colouring and spiritual power, and depict largely the joy of life. In 1875 his 'Where are the Pigeons?' won him much fame. Other works are 'Girl Knitting,' 'Shrimpers' (Amsterdam National Museum), 'Mother's Joy.' See *Roose's Dutch Painters of the Nineteenth Century*, 1898-1901.

Blondel, Fr. minstrel, famous in hist. because tradition says he was the means of securing the ransom of King Richard I. after his imprisonment by Leopold, on

his journey home from Palestine. A late thirteenth-century *Chronicle of Rheims* is the sole source of this tradition. According to the tale B., in the course of his wanderings in search of his master, the Lion Heart, played one day a love song beneath the castle of Dürrenstein in Austria, and to his joy recognised the voice of Richard singing from the tower the selfsame ditty. Some poems which have survived as having been written by a B. de Nesle are attributed to him.

Blondin, Charles (1824-97), Fr. rope-walker; b. at St. Omer, France. His real name was Jean François Grandet. His professional career began at 5 years when his talents earned for him the title of 'the Little Wonder.' Trained at Lyons, he devoted his abilities to rope-walking, and on his successful attempt to cross Niagara Falls on a rope 1100 ft. long and 160 ft. above the water, achieved instantaneous popularity. He performed the same feat many times, varying it with different accompaniments, among which were those of carrying a man across on his back, performing blindfold, wheeling a barrow, and on stilts. He d. in 1897 at Ealing, London. Vast crowds flocked to his performances, the gathering at his first attempt over Niagara Falls numbering over 25,000.

Blood, the fluid by which the tissues and organs of the body are nourished and their waste products carried away. Arterial B., which is rich in oxygen, is bright red in colour; venous B., containing little oxygen, is dark red. It is slightly heavier than water (sp. gr. 1.06), has an alkaline reaction, and has a temp. of about 100° F. The quantity contained in the human body is about one-thirteenth of the whole by weight, or about 5 quarts by vol. It has a circulatory movement, being pumped through the arteries and veins by the heart at the rate of from 72 to 130 beats per min., the amount propelled being from 150 to 190 c.c. per beat. There are 2 circuits in the B. movement; from the left ventricle the fluid proceeds through the systemic circulation, communicating with all the tissues and organs except the respiratory system; it returns to the right auricle, is passed on to the right ventricle, whence at the next beat it is propelled through the pulmonary circulation, where it becomes oxygenated, returning again to the left auricle; it is once more forced to the left ventricle, where the cycle starts anew. Viewed microscopically, the B. consists of a straw-coloured fluid containing a large number of small round red bodies called red corpuscles, and a smaller number of white corpuscles or leucocytes. The yellow fluid, called *plasma*, is very complex in composition, containing water, albumins, and other proteins, and a certain amount of mineral salts, of which sodium chloride is the most important. One of the proteins, *fibrinogen*, is converted into a stringy substance, *fibrin*, when the B. leaves the body. The threads of fibrin settle down, carrying with them the red corpuscles, until the B. becomes a jelly-like clot. This process is

called coagulation, and has important uses, for in a wound the B. clots as it emerges and plugs up the injured vessels. The calcium salts in the B. are essential for the conversion of fibrinogen into fibrin, so that clotting may be prevented by adding potassium oxalate, thus forming calcium oxalate, which settles at the bottom of the fluid, so that the surface does not coagulate. After the formation of the clot, a straw-coloured liquid separates out; this residue is called *serum*, and represents the plasma minus the fibrinogen. The plasma, therefore, serves as the medium for securing the mobility of the corpuscles, and also contains substances capable of producing coagulation; it is important as a vehicle for the transport of substances from one part of the body to another.

Red corpuscles. These are red biconcave disks of 0.008 mm. diameter and 0.002 mm. thickness. They have a tendency to run together in rouleaux when the B. is withdrawn from the body, and are so numerous that a cubic millimetre of B. contains about 5,000,000. Hence it is that their red colour dominates the B. as a whole; the red is due to the pigment hæmoglobin which is enclosed in each corpuscle by a fine membrane. The hæmoglobin is capable of combining loosely with oxygen, so that the function of the red corpuscles is to carry oxygen from the lungs to the different parts of the body. The oxygen readily combines with substances which have a stronger affinity for it than hæmoglobin, so that the hæmoglobin travels back to the lungs deficient in oxygen and is darker in colour. The carbonates and other waste products are carried back dissolved in the plasma. The red corpuscles do not actually come into contact with the fibres of the tissues which they feed; the lymph or part of the colourless portion of the B. acts as an intermediary, passing through the walls of the capillaries and reaching every part of the tissues. The quantity of lymph in the body is greater than that of the B., and it has separate vessels called lymphatics which ultimately communicate with the thoracic duct, by which the lymph is returned to the B. A pale colour in the blood results from poverty of red corpuscles, and is the condition called *anæmia*; the result is that the tissues and organs are not adequately nourished.

White corpuscles. The leucocytes are animal cells consisting of protoplasm, and number 8000 per cubic millimetre of blood. They are capable of amoeboid movement, that is, a corpuscle can change its shape and engulf small particles. This property renders them indispensable to the body as scavengers or destroyers of poisonous particles and germs. When disease germs are present in the B., there is a contest between their multiplying powers and the capacity of the leucocytes for absorbing them. They are found in the lymph as well as in the B., occur in varying forms, and probably vary in function. *Leukæmia*, or *leukocytosis*, is a condition where the number of white

corpuscles is higher than normal; an enlargement of the lymphatic glands occurs, and in the acute form other rapid changes take place which are highly dangerous. See also BLOOD PRESSURE.

Blood, Avenger of. Among primitive tribes, where there was no central authority to maintain order and justice, each community was bound to defend itself, and this induced in every family or clan a strong feeling of solidarity for purposes of protection or retaliation. If one member of it was injured all the rest were zealous for retribution. There seems to have been practically no distinction drawn in very early times between accidental and intentional homicide. Each was avenged alike, preferably by the nearest male relative of the slain man, 'the A. of B.' The blood feud or vendetta (*q.v.*) still exists in some countries and was known until recently in Corsica. Among the Hebs., however, it was recognised that deliberate murder stood on a different footing from accidental manslaughter, and though the *goel haddam* (from *goel*, the nearest kinsman) in both cases sought for revenge, yet there were provisions made for securing to an unintentional homicide a place of refuge and a fair trial. For such the altar of the tabernacle and the cities of refuge were sanctuaries (*Ex. xxi.*, Num. xxxv., Deut. xix.).

Blood, Thomas (*c.* 1628-80), an Eng. adventurer, was commonly styled Colonel B. He received presents of estates in Ireland in return for military services rendered to the parl. side. These were forfeited at the Restoration, but he again got possession of them from Charles II. He distinguished himself in 1663 by endeavouring to seize the lord-lieutenant of Ireland at Dublin Castle. At another time he attempted to seize the duke of Ormonde with intent to hang him. Shortly after this, he almost succeeded in thieving the crown jewels from the Tower of London. Charles II. visited him in prison, and through his fearlessness B. obtained his release. One of his most daring adventures was the rescue of Captain Mason from a guard of troopers close to Doncaster.

Blood-bird (*Meliphaga sanguinolenta*), species of the Australian family Meliphagidae, or honey-eaters. The bird is small and beautifully coloured, with a long beak and tail.

Blood-flower, species of plant of the Amaryllidaceae family. It is indigenous to S. Africa. The usual colour of the flower gives it its name. It contains poison, and the juice of one variety, the *Hæmanthus toxicarius*, is used in S. Africa for poisoning arrows.

Bloodhound, breed of hound, deriving its name from its finely developed sense of smell. Where this sense is employed in the tracking of a bleeding creature, the blood provides the scent necessary. The dog is able to select from a constantly moving herd of deer the wounded one, and to track it down. It is sometimes alluded to as a sleuth-hound, from the Middle-Eng. word *sleuth*, meaning track. It is probable that from the B.

all other varieties of the hound breed are descended. Their use in sport and in the sterner purposes of man-hunting dates from the Romans. Until the abolition of the slave trade in America, their use in tracking runaway slaves was almost universal, though the variety of hound then used was not the pure B., but a type called the Cuban hound. This type is different from the true, and resembles a breed obtained by crossing mastiffs with bulldogs, but their inferiority in qualities of perceptive scent was balanced by their ferocity. It is sometimes called the Cuban mastiff. The method of the B. in retaining the scent of its quarry is to follow it steadily and slowly till it is successful in reaching the object pursued.



T. Fall

BLOODHOUND

If, however, the scent is lost, the sagacious animal carefully retreats along the unsuccessful path till the scent is found, when it makes a fresh attempt in another direction. The characteristics of the B. are as follows: The head is long and dome-shaped, with large pendent ears; between the eyes and above them are puckers of the skin, which add to the dog's already intelligent expression; the eyes themselves are somewhat fierce in expression, as the third lid is visible, which results in a bloodshot expression; in the purest breeds no white is visible. Its physique is strong and muscular. The colour is deep tan, occasionally with black spots.

Blood-letting, see CUPPING.

Blood-poisoning, a morbid condition due to the circulation of bacteria in the blood-stream. See PYÆMIA.

Blood Pressure, the pressure that must be applied to an artery in order to stop the pulse in the vessel beyond the point of pressure. The pressure is assumed to be equivalent to that to which the blood is subjected by the force of the heart and the elasticity of the vessels; it is, however, also dependent on the thickness or hardness of the vessel wall and to some extent on various other considerations. B. P. is greatest at each heart-beat—systolic pressure, and decreases between the beats

—diastolic pressure. By systolic pressure is denoted the maximum internal pressure to which the arterial walls are subjected at a time corresponding to the systole of the ventricle; the lowest point to which the pulse falls between each pulse-beat is called the diastolic pressure, and corresponds to the diastole of the ventricle. The systolic pressure in children is equal to that of a mercury column about 100 mm. high; in young adults, 120; and increases with advancing age, being about 130 at the age of 60. Up to comparatively recent times B. P. measurements were, generally speaking, concerned with the systolic pressure; but the value of diastolic readings became increasingly recognised. The arterial wall is continually subjected to this diastolic pressure; it increases with the peripheral resistance and *e converso*; and a loss of elasticity of the arterial system causes a diminution in diastolic pressure. If the peripheral resistance remains normal, the diastolic pressure is greater or less according as the action of the heart is rapid or slow. B. P. increases with exposure to cold, by diseases of the kidneys, by arteriosclerosis and disorders of the ductless glands, and may also be affected by nervous disorders. High readings up to 250–300 mm. may be recorded in advanced cases of kidney disease and also cerebral hæmorrhage. B. P. declines below the normal as the result of warmth, in wasting diseases such as pulmonary tuberculosis, and cancer of the digestive system, and cardiac diseases. As regards the method of measurement B. P. is measured by means of the sphygmomanometer, which consists of a rubber bag strapped round the arm, and of which the interior communicates by 2 tubes with a pressure gauge and a hand pump. The bag is pumped up so as to constrict the arm, and the systolic pressure is taken as that at which the pulse disappears from the vessel further down the arm. In cases where B. P. is excessive, it may be lowered to some extent by a saline purgative, low diet and warm baths, and the administration of such remedies as iodide of potassium or thyroid extract. In proportion as instruments for B.-P. measurement have developed in accuracy, arterial B.-P. observations in clinical medicine have played a part of increasing importance in connection with diagnosis, prognosis, and treatment.

Blood-rain, a red rain which falls in Italy and S. Europe. Microscopic examination reveals red dust from the sandy deserts of N. Africa to be the cause of the phenomenon. The cause is thought to be found in the upward force of water-spouts and whirlwinds. Among the natives of N. Africa these rainless whirlwinds are called 'devils.' The Canary Is. are subject to singular phenomena.

Bloodroot (*Sanguinaria canadensis*), species of Papaveraceæ native to N. America. It grows from a rhizome which is of use medicinally.

Blood-stains, the dried and darkened residue left on clothing, etc., after contact

with blood, often important as evidence in criminal actions. The problem may be to decide whether a given stain was produced by blood or not, whether the blood was that of a human being or not, or whether the stain is recent or not. The time for which a B. has been in existence can only be approximately decided by the amount of hardening or the deepening of the tint. After the blood has become black, no further change can be detected. The tests to decide whether a stain was produced by blood or not may be microscopic, spectroscopic, or chemical. The stained substance is first soaked in a solution of glycerine in water to a sp. gr. of 1.023, or in normal saline solution. This softens the stains without causing other changes. Examination under the microscope should then reveal the presence of corpuscles, which, however, are similar in shape amongst all the mammalia except the camel tribe, where they are elliptical instead of circular. Mammalian red corpuscles are distinguished from those of all other animals by the absence of a nucleus. For spectroscopic examination a solution of the suspected substance in water is prepared. The spectrum of blood exhibits 2 dark bands, one in the middle of the green rays, and the other between them and the yellow. The addition of ammonium sulphide to the solution reduces the oxy-hæmoglobin to hæmoglobin, and one dark band only is exhibited. The chief chemical tests are the reaction with guaium and the production of hæmin crystals. These tests merely decide the presence of mammalian blood, and to distinguish between human and other blood it is necessary to make use of the effect of inoculating animals with the blood of a different species.

Blood Transfusion, the transfer of blood from one individual, the donor, to a recipient. The process was known in England and France in the seventeenth century. The first experiments were made with sheep, dogs, and cats, but early in the nineteenth century attempts to transfuse the blood of human beings were made in England, and later in Germany, often with disastrous results. Some of these probably received an explanation in Janssky's discovery (1907) of the 4 different types of human blood, and the fact that, when 2 of these are mixed, agglutination of the red corpuscles occurs in certain cases. A donor is now selected with blood of the same group as the recipient's or of Group I. (Janssky) or Group IV. (Moss), because the blood-cells of the latter are not agglutinated by admixture with blood serum of any other group. But the Janssky method of numeration is scarcely utilised at all in this country or America, and in only a few instances on the Continent. Whilst the blood cells of Group IV. cannot be coagulated by any group of serum, there is always the possibility of the serum of this blood coagulating the corpuscles of the patient, the only protection being the extent of dilution. Fatalities have occurred through the indiscriminate use of

Group VI. blood, and it is one of the rules of the Blood Transfusion Service of the Brit. Red Cross Society that under no circumstances will Group VI. blood-donors be supplied for any but Group IV. patients, even, a cross-agglutination of the donor's blood with the patient's serum not being of any value as a safeguard. In all cases careful tests are also made to see that the blood is free from germs of any infectious disease.

The original method of transfusing blood consisted in securely applying the cut end of an artery of the donor to the cut end of a vein in the recipient's forearm. The technique of this method required considerable skill; there is no means of measuring the amount transfused nor of controlling its flow, and the process is slow. But B. T. from the artery has long been discarded, and the blood is now drawn invariably from the vein of the donor. Modern B. T. technique is simple and easy, and the donor is usually on and off the table in a few minutes.

During the First World War, when immediate transfusion was the only means of saving the life of many of the wounded, a quick and safe means of effecting it was essential. Frequently the artery and vein were connected by a sterilised canula, a curved glass or silver tube of fine bore: this saved time and required considerably less skill than that needed to apply the ends of the blood-vessels. Doctors who prefer to transfuse 'whole' blood (i.e. blood not diluted by an anticoagulant) still use this method. A more rapid means was introduced by Captain O. H. Robertson, who collected the blood of the donor in a graduated bottle containing 3.3 per cent of sodium citrate solution to prevent coagulation. He then pumped the mixture from the bottle into the veins, through a needle of selected bore, and was thus able to regulate and measure the amount transfused and to give it with least inconvenience to the patient.

Rous and Turner (1916) discovered that blood could be preserved without deterioration for periods up to 3 weeks by keeping it in a refrigerator at a temp. just above its freezing point, so that it is possible to have at hand reasonably large quantities for use in emergency.

B. T. has been extensively used to repair loss of blood through hæmorrhage, hæmophilia, and anaemia, and its use as a prophylactic against shock is increasing. It is administered before operations in cases of debility, toxæmia due to burns, and in certain kinds of gas poisoning.

During the Second World War (1939-1945) greater use was made of B. T. than ever before. Instead of whole blood, the plasma alone was often employed, i.e. blood from which the red and white corpuscles had been removed. It was found that, if the plasma was carefully dried, it could be stored for indefinite periods, and then reconstituted by dissolving in sterile distilled water when required. A second advantage of plasma over whole blood is that it can be trans-

ferred to an individual of every blood group without causing agglutination of the corpuscles. See G. Keynes (ed.), *Blood Transfusion*, 1948.

Blood-worm is the popular name applied to the larvæ of some dipterous



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MRS. BLOOMER

insects of the genus *Chironomus* and family Chironomidae. In form they are worm-like, and owing to the hæmoglobin present in it their blood is red; they live in mud and sand in water, and anglers use them for bait.

Bloody Assize, see under JEFFREYS OF WEM, LORD.

Bloomer Costume. About 1848 the

'Woman's Rights Movement' in America gave rise to the adoption of an attire for its members somewhat resembling that of men. In the following year, 1849, Mrs. Bloomer gave her name to a costume which consisted of a short jacket, a short skirt reaching just below the knee, and a pair of 'bloomers' made on the pattern of Turkish trousers. The courage necessary to adopt this form of apparel was found wanting in many, and only a few followed Mrs. Bloomer's advice.

Bloomfield: (1) Tn. of New Jersey, U.S.A., in Essex co., 11 m. N.W. of New York. The manufs. include boots and shoes, woollens, and rubber products. Pop. 41,600. (2) Cap. of Davis co., Iowa, U.S.A. It is situated 1 m. S. of R. Fox. It has flour mills, and contains the S. Iowa Normal and Scientific Institute. Pop. 3000.

Bloomfield, Maurice (1885-1928), Amer. scholar and philologist, b. at Breditz, Silesia; emigrated in 1867, and graduated at Furman Univ., S. Carolina; studied Sanskrit at Yale and Johns Hopkins Univ., at which, in 1881, he was appointed prof. of Sanskrit, a position he held till 1926. Among his works are: *Contributions to the Interpretation of the Vedas*; he ed. *The Atharva Veda and Gopatha Brâhmana*, 1899, and *The Kaucika Sutra*, 1890; *Cerberus, the Dog of Hades*, 1905; *A Vedic Concordance*, 1907; *The Life and Stories of the Jaina Saviour Pârçvanâtha*, 1919.

Bloomfield, Robert (1766-1823), Eng. poet, b. at Honington; educated at the national school. He learned the shoe-making trade in London. His first poem, *The Milkmaid*, was pub. in the *London Magazine*. In 1786, while staying in the country, he conceived the idea of *The Farmer's Boy*, and he afterwards composed it in a London garret. It was pub. in 1800, and 25,000 copies were sold.

Bloomington: (1) City of McLean co., Illinois, U.S.A. It has foundries and machine shops, meat-packing establishments, and timber yards. Valuable coal mines are near the city, which is situated in a fertile and progressive farming region. A small forest called Blooming Grove gives the tn. its name. Its commercial rise dates from 1867 when the proximity of coal was discovered. Pop. 32,800. (2) City of Monroe co., Indiana, U.S.A. Its pop. is employed chiefly in the manuf. of furniture and wooden articles, and in the adjacent limestone quarries. It has a univ., whose station of biology is situated at Winona Lake, Kosciusko co. Its settlement took place in 1818. Pop. 20,800.

Bloomsburg, co. seat of Columbia co., Penn., U.S.A., on Fishing Creek, 40 m. S.W. of Wilkesbarre. Manufs. railway cars, carriages, silk, and woollen goods. Pop. 8,000.

Bloomsbury, dist. of W.-Central London, England, lying N.E. and S.W. between Gray's Inn Road and Tottenham Court Road, and N.W. and S.E. between Euston Road and Holborn. It contains the Brit. Museum, Univ. College, Univ. College Hospital, and other public buildings.

Blore, Edward (1787-1879), Eng. architect, b. at Derby on Sept. 13, son of the topographer, Thomas B. (1764-1818). He designed a house at Abbotsford for Sir Walter Scott, and executed designs for other mansions and public buildings in various parts of the country. He was entrusted with work at Lambeth Palace, Windsor Castle, Glasgow Cathedral, etc. He did much to revive the Gothic style of architecture.

Blore with Swinscoe, township of N. Staffordshire, England. It is situated 4 m. N.W. of Ashbourne.

Blount, Charles (1654-93), Eng. deist, b. at Upper Holloway. Son of Sir Henry B., who pub. a description of his journey to the Levant. His *Anima Mundi*, 1679, aroused criticism on account of its scepticism, and was banned by the bishop of London. His best-known book is *The Two First Books of Philostratus concerning the Life of Apollonius Tyaneus*, 1680.

Blount (or Blunt), Edward (fl. 1588-1632), Eng. printer and stationer, of St. Paul's Churchyard, London; son of a London merchant-tallor. His most outstanding publication was in 1623, when, in collaboration with another printer, Isaac Jaggard, he brought out John Heming and Henry Condell's ed. of Shakespeare's plays, known as the first folio. B.'s name appears as one of the printers of the folio, both on the title page and in the colophon. His first venture, as registered in extant stationers' books, was Joshua Sylvester's *The Profit of Imprisonment* (1594). He also produced the *Hero and Leander* of Marlowe, of whom he was an intimate friend. Other famous books issued by B. were Florio's translation of Montaigne's *Essays* (1603) and Shelton's first Eng. translation of *Don Quixote* (1620). B. was also known as a translator himself, one of his best achievements being *Ars Aulica, or the Courtier's Arte*, which he trans. from the It. of Ducl. In 1632 he collated the court comedies of Lyly for publication.

Blount, Thomas (1618-79), Eng. antiquarian, b. at Bordesley, Worcestershire. Detailed knowledge of his life is scanty. His Catholicism hampered his career at law, and he retired to his estate at Orleton. He continued his study of the law, but with no professional intentions. His works include *Glossographia*, a work still of value among literary antiquarians; *Nomolexicon*, a dictionary of law terms; and *Fragmenta Antiquitatis*. His *Boscol* appeared, ed. with his life, in 1894. He d. at Orleton.

Blouse, originally the Fr. term used for a loose-fitting upper garment worn by peasants, the favourite colour being blue. The B. has for very many years been popular with women of all countries, and specially of England and America.

Blow, John (1649-1708), Eng. musical composer. He was one of the first choir-boys of the chapel royal, of which place he was made organist in later life. He obtained his degree of doctor of music, and was appointed organist of Westminster Abbey at the age of 19 (1668); hon.

Mus.D., Canterbury, 1678; succeeded by Purcell, 1679; reinstated after Purcell's death, 1695; choirmaster at St. Paul's 1687-93. He composed the music for the anthem *I was glad when they said unto me* at the opening of the cathedral.

Blow-fly, see BLUE BOTTLE-FLY.

Blowing-machine, contrivance for producing a more or less continuous discharge of compressed air. The most primitive type is the ordinary domestic bellows, which consists of a wedge-shaped chamber with collapsible leather sides; the top and bottom are rigid, and the bottom is provided with a valve opening inwardly, so that as the collapsible sides are extended, the air enters. When the top and bottom are squeezed together again, the air is prevented by the valve from escaping otherwise than by the nozzle. In the double bellows there are 2 compartments separated by a fixed partition, and an inwardly opening valve is situated in the under side of each compartment. On the machine being extended and compressed by a lever acting on the lowermost rigid board, the air enters the lower compartment, whence it can only escape to the upper one, which acts as a reservoir, a weight on the uppermost rigid board producing a fairly continuous current through the outgoing pipe from the upper compartment. For blast furnaces blowing-engines, depending upon the to-and-fro motion of a steam-driven piston, are used. There is a chamber with an inwardly opening valve on each side of the piston, so that air is expelled at each stroke. Both chambers of the cylinder communicate with a large air reservoir, so that the blast is kept uniform. Fans for compressing air depend upon the centrifugal motion of air between vanes fitted to the spokes of a rimless wheel. The fan is enclosed in a cylindrical chamber somewhat eccentrically; the air is admitted at orifices around the axle, is driven towards the circumference by the revolution of the fan, and emerges through a pipe fixed tangentially. The best results are obtained with curved vanes, the convex side towards the exit. In parts of Spain a water B. is used. A fall of water is necessary, and the arrangement includes a cistern where the water collects; a wooden shaft with a few air holes through which air is sucked as the water falls down the shaft; and a wind chest where the air and water separate. The water flows away through an exit pipe at the bottom of the chest, and the air is forced out through a nozzle by the compression induced by the continuous descent of air mixed with the falling water. Roots's rotary blower has a chamber which consists of 2 semi-cylinders separated by a rectangular space greater in width than the radius of the cylinders. Mounted axially with the cylinders are 2 revolving pieces, shaped like a figure of eight, almost equal in length to the diameter of the semi-cylinders. They revolve in opposite directions, being at right angles every quarter-revolution. The air enters at the base of the chamber into the space be-

tween the revolving pieces which gradually diminishes until the air is expelled at the top of the chamber.

Blowitz, Henri Georges Stephan Adolphe de (1825-1903), Anglo-Fr. journalist, b. in Bohemia; acquired, when travelling, a complete knowledge of sev. European languages, and was appointed prof. of foreign languages at the Marseilles Lycée. After his marriage, in 1859, he turned to journalism, and sev. times incurred the displeasure of the authorities. His remarkable career really begins in 1873, when he became chief Paris correspondent to *The Times*. His most sensational feat was to enable *The Times* to pub. the entire text of the treaty of Berlin at the actual moment it was being signed in Germany. In 1877 and 1888 he exposed internal designs against the Fr. Republic. His *Memoirs* were pub. in 1903.

Blowpipe, weapon employed by Indian tribes of S. America both in hunting and in war. A poisoned shaft, fixed in the end of the B. or tube, is driven out by the breath. The tube, usually about 10 ft. long, is made of reed or the stem of a palm. Near Para, the poisoned arrows, made of palm spines, are 17 in. long, whilst in Peru they are only about 2 in. long.

Blowpipe, instrument used with a gas or spirit flame to quicken combustion and therefore increase the temp. of the flame area. In its usual form it is a conical vessel with the mouthpiece at the narrow end and a fine nozzle inserted towards the base.

Bloxam, John Rouse (1807-91), Eng. historian, educated at Rugby and Magdalen College, Cambridge; elected fellow of his college, 1836. In 1841 he became pro-rector of the univ., and held various offices at his college until 1862. He pub. and left in MS. valuable collections relating to the hist. of Magdalen College.

Bloxwich, tn. of E. Staffordshire, England. It is an eccles. dist., and is situated 3 m. N. of Walsall. Pop. 9000.

Blubber, the thick fatty covering which envelops the body of the whale and of various other marine animals. It is one of the products of the whale which are of commercial value, and is the source of sperm oil. The migrations of whales have been studied by firing darts into the B., so that the whale so marked can be identified later in other waters.

Blücher, Gebhard Leberecht von (1742-1819), Prussian field marshal, prince of Wahlstadt, b. in Mecklenburg-Schwerin. In the year 1756 he entered the service of Sweden, and 4 years later was captured by Prussians in the Pomeranian campaign. He was persuaded by his captors to enter the service of Prussia and was given a lieutenancy. He served in the later battles of the Seven Years war. He gained promotion to the rank of captain, but by his excesses in private life lost favour with the authorities, and disgusted with his treatment retired into private life (1773). In 1788 after the death of Frederick he was restored to his old regiment, the Red Hussars. In the following year he became a colonel, and

in 1794, as a reward for his services in the Fr. campaigns, he was made a major-general. In 1801 he became a lieutenant-general. The war of 1805-6 found him active as a cavalry leader, and as such he took part in the battle of Auerstädt, and he covered the rear of Prince Hohenlohe's army on the retreat to Pomerania. He then went northward and fought in the neighbourhood of Lübeck, being in Nov. 1806 forced to surrender to the Fr. at Ratkau, but was soon exchanged. During the period of Napoleonic domination he was actively in touch with the national party, and was, in 1812, banished for his pronounced opinions from the court. The beginning of the War of Liberation found him placed in high command of the Prussians, and he organised the Prussian army, becoming commander-in-chief of the army of Silesia with 90,000 men under his command. He was full of energy and was prepared to attempt anything. He defeated Macdonald at Katzbach, and by his defeat of Marmont prepared the way for the defeat of Napoleon at Leipzig. He was made a field marshal after the defeat of Marmont, and stormed Leipzig on the last day of the battle. He persuaded the allies to carry the war into Fr. ter., and by his courage and energy in the face of defeat he ultimately triumphed and led the army of Silesia directly on to Paris. He proposed that the ravages of the Fr. in Germany should be avenged by equal ravages in Paris, but was prevented from carrying out his proposals. In 1814 he visited England and was welcomed everywhere enthusiastically; in the same year also he was made prince of Wahlstadt. He retired to Silesia, but was soon called from his retirement to take part in the campaign of the Hundred Days. He sustained a severe defeat at Ligny, and in this battle nearly lost his life. But he moved on and marched to the assistance of Wellington. His forced march was the means of his intervening at the critical moment in the battle of Waterloo, and of turning the defeat of the Fr. into a headlong rout. The rout was complete and decisive owing to B.'s relentless pursuit of the enemy. The allies re-entered Paris in July 1815, and here B. stayed for some time. He retired, however, to his Silesian estates owing to his age, and *d.* there in Sept. 1819. Throughout his life he was rash, hasty, and impetuous, but these qualities, which told against him in private life, were the means of making him a dashing leader of cavalry, a good patriot, and a great general.

'Blücher,' The cruiser of the Ger. Navy, which, with the *Seydlitz* and *Moltke*, bombarded Hartlepool, Yorkshire, on Dec. 16, 1914. In the action she was hit by guns from the land forts. She was sunk by the Brit. at Dogger Bank, Jan. 24, 1915.

Bludenz, tn. of Austria, situated on the R. Ille. It has an interesting castle and alum works. Pop. 5500.

Blue, one of the primary colours. Artists use as B. pigments: ultramarine, which is prepared from lapis lazuli; cobalt

B. of which there are many varieties, consisting of cobalt mixed with earthy or metallic bases; indigo; Prussian B., which is ferrocyanide of iron. In dyeing, the Bs. form a large group of the coal-tar products. In laundry work a B. colour is imparted to linen and cotton goods in a very faint degree to heighten the impression of whiteness; many preparations for this purpose are in use.

Blue, in sports, a man who has won the right to wear the blue cap and blazer of Oxford or Cambridge. Each of these univs. has a blues committee, which awards blues and half-blues for the chief inter-varsity contests. The games for which Bs. are mostly awarded are rowing, cricket, and football. At athletics the first representative in each event is a blue and the second a half-blue. In tennis, racquets, swimming, and boxing half-blues are awarded.

Bluebeard, a character first appearing in *Barbe Bleue* one of Perrault's *Contes* (1697). He was a monster of wickedness who killed his wives, hiding their bodies in a secret room. His end came through the unconquerable curiosity of his last wife, who opened the secret room and made the gruesome discovery. He was killed by her brothers. His blue beard gave rise to the appellation. See RETZ, GILLES DE.

Bluebell, the name given to the *Campanula rotundifolia* in Scotland, where it grows abundantly, and is the same as the harebell of England. It belongs to the dicotyledonous order Campanulacæ and is totally different from the Eng. B., or *Scilla nutans*, otherwise known as the wild hyacinth, which is a species of the monocotyledonous order Liliacæ.

Bluebird, Blue Warbler, and Blue Robin, names given to a N. Amer. bird (*Sialia sialis*). It is recognised with as much pleasure as the robin is in England, by reason of its tameness and absence of fear of human beings. It is rather larger than the robin, though its general appearance and diet closely approach it. It lays about 6 pale-blue eggs. As a migratory bird it sounds the approach of spring with its return.

Blue-books, a name given to parl. publications, which are usually bound with blue covers. The idea of printing records of parl. business originated in a dispute in 1681 over the question of the duke of York's exclusion from the throne. A statement was circulated that falsified accounts of the proceedings had been circulated, and it was therefore proposed by Sir John Hotham to print all reports. The cheap price of these publications has only been in vogue since 1836. Save where a special price is stipulated, the usual amount charged is one halfpenny per sheet of 4 pages. A subscriber of £20 annually may obtain all parl. records issued throughout the year. Naturally the output increased in bulk, and possibilities of confusion in their arrangement existed, but the method of indexing adopted and the inclusion of a précis in the front of each vol. makes it possible to refer quite quickly and easily to any

paper, no matter how trifling, or of what session. From the Board of Trade a useful publication is issued monthly, which contains valuable information relating to the world's trade and commerce. Annual Bs. are issued by all the Brit. crown colonies and protectorates, and by the mandated ters. They give detailed information on revenue, import duties, exports and imports, currency, weights and measures, etc. The information so imparted is generally given in tables numbered uniformly throughout the series, or with but slight variations. Without counting the accounts of the different Bills, the number of B. issued in 1887 was 1234. In 1887 a resolution was passed concerning the reproduction of printed matter in the B., which stated that no restraint would be exercised upon the reproduction of information contained in the majority of gov. publications, but that every rule of copyright was to be observed in the treatment of matter printed in the *Board of Trade Journal*, the reports of the *Challenger*, and official maps and charts. The distinctive colours which mark foreign 'B.' are, America, foreign correspondence, red; Ger., white; Fr., yellow; Austrian, red; Portuguese, white; It., green; Jap., grey; and Chinese, yellow.

Bluebottle, see CORNFLOWER.

Bluebottle Fly, name given to sev. species of Muscidae, dipterous insects related to the house fly, *Musca domestica*. They are, however, larger than the latter. A loud buzz marks its flight, and the extent of its wings across is almost an inch. Its head is black, the thorax grey, and the abdomen blue, with 3 black stripes. Its finely developed sense of smell enables it to find the flesh upon which it lays its eggs. It thrives most numerous from spring to autumn, and is common to Great Britain and Europe. *Calliphora vomitoria* and *C. erythrocephala* are common Brit. species; and *Sarcophaga carnaria*, the flesh-fly, a member of the family Sarcophagidae, resembles the B. very closely.

Blue - coat School, see CHRIST'S HOSPITAL.

Blue-eye (*Entomomyza cyanotis*), species of bird of minute structure and great beauty. It is found in large numbers in New S. Wales. It belongs to the honey-eaters, and goes under the name of blue-cheeked honey-eater.

Bluefields River, riv. of Nicaragua flowing into the Pacific Ocean. It is joined by the Escondida, and empties itself into Bluefields Bluff. The tn. of Bluefields is within a few m. of its mouth. The riv. is about 50 m. in length.

Blue-fish, a fish belonging to the family Scombridae. The E. coast of N. America is its only home. It is blue on top and whitish below, while a large black spot is seen at the base of the pectoral fins. Its food is other fish of smaller size.

Blue-gowns, Scottish term given to paupers. It originated from beadsmen who in return for a small annuity were employed by persons desirous of their efforts in prayer.

Blue Grass (*Poa compressa*), species of perennial glaucous-hued grass found in Europe and N. America. It is permanent, and has a great value as pasture. The property of its creeping root-stalks causes it to form thick turf. The leaves are flat and often rough, and the flowering stems are from 1 ft. to 2 ft. in height.

Blue Island, tn. of Cook co., Illinois, U.S.A.; has copper works and extensive brickyards. Pop. 16,600.

Blue Jay (*Cyanocitta*), Amer. genus of the Corvidae, or crow family. *C. cristata* is a beautiful bird, the plumage being blue above, white beneath, and variegated with black and white. Like other members of its family it is a great thief, and in the spring it eats both the eggs and young of other birds, though in the summer it feeds on fruit and insects. It has a harsh and unmelodious voice.

Blue John Mine, a cave of many chambers in Derbyshire, England. It is situated in Tray Cliff in the N. of the co. W. Castleton is 1½ m. distant. Blue John is a name for fluorspar (q.v.).

Blue Laws, a collection of very severe laws regarding behaviour and the due keeping of the sabbath, alleged by the Rev. Sam. A. Peters in his *General History of Connecticut* to have been in force among the early colonists of New Haven and Connecticut. This allegation was at first thought to be without foundation, but they were later found, in part, to exist among the New Haven Statutes.

Blue Mountains: (1) A spur of the Dividing Range of mts. in New S. Wales. They run almost parallel with the coast about 80 m. from it. A passage was found over them leading to the Bathurst Plains in 1813. Mt. Beemarang, 4100 ft., is the highest point. Parts of the roads which cross them are 3400 ft. above sea-level. The construction of the railway over the mts. was a considerable engineering feat. Caves exist of great size, those of Jenolan being notable. (2) Range of mts. in Oregon, U.S.A. It extends from N. to S., passing through the co. of Umatilla. The mts. are composed chiefly of granite, and their slopes are covered with great forests of pine and fir. (3) Range of mts. in Jamaica, whose highest peak is W. Peak, 7105 ft. The altitude of this system, whose main chain extends from E. to W., varies between 5000 and 7000 ft. (4) Kittatinny Mt. system of Pennsylvania and New Jersey, forming part of the Appalachian system. It stretches from Orange co., New York, traversing the cos. of Sussex and Warren in New Jersey. At the Delaware Water Gap the R. Delaware crosses the mts. Their structure is largely of rocks belonging to the Silurian period.

Blue Nile, see AZREK.

Blue Ox, see NYLGHAU.

Blue Peter, a rectangular blue flag with a white square in its centre which is flown in a ship when she is on the point of sailing. Usually hoisted at the fore-royal masthead.

Blue Pill, a mercury preparation containing mercury, confection of roses, and powdered liquorice. Mercury in this

form is active, and produces marked effects; the blood corpuscles are increased in number, the blood is improved temporarily, and sources of irritation in the intestines are removed. It is therefore useful in what is usually called biliousness, but its continued administration is generally not advisable.

Blue Ribbon, the badge of all total abstainers, who at one time styled themselves the 'B. R. Army.' The army commenced its career in 1878 in America, and extended to Britain. The term probably originated from the B. R. badge which was worn by each knight of the Garter. The term is used also when speaking of some prize, as, for instance, the 'Derby' stakes.

Blue Ridge, the easternmost chain of the Appalachian Mts. of Virginia and Carolina. It is famous for the splendour of its scenery. Its highest point is the Grandfather, in N. Carolina, 5897 ft.

Blue Roach, see AZURINE.

Blue-robin, see BLUEBIRD.

Blue Shark (*Carcharias glaucus*), species of shark, a native of tropical seas, but a frequent visitor in warm summers to the Eng. Channel, where it is detested by the fishermen, as it destroys both fish and nets. It is generally 6-12 ft. long.

Blue-stocking, term applied to ladies of learning and literary accomplishments; especially those who air their erudition in a manner pedantic and unwomanly. About 1750 a literary circle was estab. in London consisting of ladies and gentlemen, among whom was the distinguished Mr. Benjamin Stillingfleet, who habitually wore blue stockings—hence the name. The name has been adopted in France and Germany.

Bluthroat, or **Blue-breast**, name given to a genus of birds, related to the redstarts and resembling the nightingale. There are 2 species: red-spotted (*Cyanocula suecica*), white-spotted (*C. wolfl*). It possesses beauty of form and voice. Its ability to imitate the songs of other birds earned for it a Lapland name meaning a hundred tongues. The throat and upper neck are bright blue. The females are less conspicuous than the males. As a bird of passage it is known in many parts of Europe.

Blue, Victor (1865-1927), Amer. admiral, b. in Richmond co., N. Carolina. In the Sp.-Amer. war in 1898, he served with the fleet which blockaded Admiral Cervera's fleet off Santiago, Cuba. Won fame by getting ashore and learning the strength and positions of the hostile squadron. Appointed chief of the Bureau of Navigation, U.S. Navy. In the war of 1914-18 he commanded the *Texas* in the N. Sea. Promoted rear-admiral in 1919.

Blue-warbler, see BLUEBIRD.

Blue-wing (*Querquedula discors*), species of Anatidae; often called the blue-winged teal. It is a brilliantly coloured bird with bright blue wing-coverts. It is a native of N. America which migrates in winter to S. America.

Blum, Léon, Fr. writer and politician; b. Apr. 9, 1872, in Paris. Educated at the

lycées Charlemagne and Henri IV. Master of requests to the Council of State from 1895, he also became well known as a critic on *Gil Blas*, *L'Humanité*, *Le Matin*, and *Comœdia*. He backed Jaurès in the Dreyfus affair, and joined the Socialists in 1899. His critical work, *Nouvelles Conversations de Goethe avec Eckermann*, appeared anonymously in 1901. He was elected deputy for Seine in 1919. Fiercely opposing the policy of occupation of the Ruhr, he assisted in founding, early in 1924, the cartel of the left which led to the downfall of Poincaré and Millerand; and he was the real leader of the Socialists during the Herriot Ministry of 1924-25. He became Prime Minister in 1936; during his ministry various leagues of violence were disbanded and many reforms effected. He resigned in 1937, but was again Prime Minister in 1938, though only for a few weeks. After the fall of France in the Ger. invasion in 1940 B. was placed under arrest, and remained a prisoner in Ger. hands, being taken to Germany in 1944, where he was liberated by the allied armies in May of the following year. When the gov. of M. Félix Gouin was formed in Jan. 1946 B. was given ambassadorial status and placed in charge of financial and economic missions in U.S.A. and elsewhere. Subsequently to the Oct. referendum on the new Fr. constitution he became stop-gap Prime Minister for the specific purpose of visiting London, where he laid the foundation of the existing Anglo-Fr. alliance. Other publications: *Le Livre de mes amies*; *Étienne*; *En lisant*, 1903; *Au théâtre*, 1905-11; *Du Mariage*, 1907; *Stendhal et le Byrrisme*, 1914; *L'Exercice du pouvoir*, 1937; and *À l'échelle humaine*, 1945. See R. L. Stokes, *Léon Blum*, 1937.

Blumenau, dist. and tn. in Santa Catharina, Brazil, situated on the R. Itajahy, 60 m. N.W. of Desterro. The tn. was founded as a Ger. settlement by Dr. Hermann Blumenau in 1852. The climate is healthy, and tobacco, cereals, sugar, and coffee are the chief products of the dist. Pop. (dist.), 100,000; (tn.) 40,000.

Blumenbach, Johann Friedrich (1752-1840), Ger. naturalist, b. at Gotha; educated at Jena and at Göttingen, where he became extraordinary prof. in 1776 and ordinary prof. in 1778, remaining at the univ. for about 60 years. During that time he lectured on natural hist., anatomy, medicine, and physiology. In 1785, and therefore before Cuvier, he estab. the dependence of zoology on comparative anatomy, and also made important contributions to ethnology. He visited England in 1788 and 1792, and his jubilee in 1825 was made an international celebration. He resigned his professorships in 1835. His works include: *De generis Humani Varietate Nativa*, 1775; *Manual of Natural History*, 1780; *Institutiones Physiologicae*, 1787; *Collectio Craniorum Diversarum Gentium*, 1790-1828; *Manual of Comparative Anatomy and Physiology*, 1804, etc., many of which were trans. into sev. languages.

Blumenbachia, S. Amer. genus of Loasaceae with a hairy fruit which becomes attached to the coats of wild animals and thus distributes the seed.

Blumenthal, Jacob von (Jacques), (1829-1908), Ger. pianist, b. at Hamburg. After studying under Grund (Hamburg), Bochet and Sechter (Vienna), and Herz and Halévy (Paris), he came to London in 1848. Here he was appointed pianist to Queen Victoria, and became well known as a composer and teacher of music. He wrote many popular songs, of which the best known is, perhaps, *My Queen*.

Blumenthal, Leonhard, Count von (1810-1900), Prussian general. Member of the general staff, and chief of the staff of Schleswig-Holstein army, 1849. He served in the campaign against Denmark, 1864, and under Crown Prince Frederick William in Austrian campaign. B. was chief of the staff to crown prince of Prussia in Franco-Prussian war (1870-1871). In 1883 created field marshal.

Blümlisalp, mt. group of the Bernese Oberland, Switzerland. Chief peaks: Blümlisalphorn (12,038 ft.), Weisse Frau (12,012 ft.) and Morgenhorn (11,927 ft.).

Blundell Sands, seaside resort of Lancashire, near the entrance to the Mersey R. and 6 m. from Liverpool—of which it is practically a suburb. Pop. 4000.

Blundell's School, a public school, just inside Tiverton, Devon, founded by Peter Blundell, a local clothier, in 1604. Blackmore went to the school, which indeed figures in his *Lorna Doone*. The modern buildings date from 1882.

Blunden, Edmund Charles, Eng. poet and prose-writer, b. Nov. 1, 1896, at Yalding, Kent; educated Christ's Hospital and Queen's College, Oxford. He served during the First World War in France and Belgium, 1916-19, with the Royal Sussex Regiment. His poems were pub. as early as 1914, but his first notable vol. was *The Waggoner and other Poems* (1920), followed by *The Shepherd and other Poems of Peace and War* (1922), which contained the fruits of his war experiences, for which the Hawthornden Prize was awarded. He was prof. of Eng. literature in Tokyo Univ., 1924-27, and returned to literary journalism in London. In 1931 he became fellow and tutor in Eng. literature in Merton College, Oxford, where he remained until 1943. His sev. vols. of poems were issued in a collected ed. in 1930, and subsequent vols. were collected in a second series, pub. in 1940. His book of war reminiscences, *Under-tones of War* (1928) enhanced his reputation as a prose-writer, subsequently maintained in a different field with his 2 biographies of Leigh Hunt (1930) and Shelley (1946). Other prose works include: *Christ's Hospital*, a retrospect, 1923; *On the Poems of Henry Vaughan*, 1927; *Nature in English Literature*, 1929; *The Face of England*, 1932; *Charles Lamb and his Contemporaries*, 1934 (the Clark lectures delivered at Trinity College, Cambridge); *The Mind's Eye* (essays), 1934; *Keats's Publisher*, 1936; *Thomas Hardy*, 1942; *Cricket Country*, 1944. A

later vol. of poems, *Shells by the Stream*, was pub. in 1944.

Blunderbuss (perverted form from Dutch *donder*, thunder, and *bus*, gun, originally box) a short gun with a large bore, firing a number of balls or slugs. Its name may have been perverted to 'blunder' because practically no aim is taken with it. At short range it can do much damage among a number of objects. It is now obsolete.

Blundeville, Randolph de, Earl of Chester (d. 1232), Eng. warrior and statesman, succeeded as earl of Chester in 1180. He married Constance, widow of Geoffrey, son of Henry II., in 1187. He joined in Richard's interest in the siege of Nottingham in 1194, accompanied Richard to Normandy, quarrelled with Constance, and imprisoned her in the castle of St. John Beveron in 1196. A few years afterwards he married Clemence, sister of Geoffrey. He accompanied John abroad in 1199. He led armies engaged in Welsh wars and accompanied John to Poitou in 1214. He took John's, and later Henry III.'s, side against the barons in 1215, and together with Fulk de Bréauté, stormed and plundered Worcester in 1216. In 1217 he received the earldom of Lincoln, and the following year he went to the Holy Land. Here he joined in the siege of Damietta in 1219. Returning home he deserted the royal party and plotted unsuccessfully with de Bréauté to surprise the Tower and obtain the dismissal of Hubert de Burgh, but ultimately submitted. He took part in the siege of Nantes in 1230, and was left in Brittany with Aunale and William Marshall in charge of the army. He returned to England in 1231.

Blunt, Edward, see **BLOUNT**.

Blunt, John James (1794-1855), Eng. divine, b. at Newcastle-under-Lyme, and educated at St. John's College, Cambridge. In 1839 he was made Lady Margaret prof. of divinity at Cambridge, and in 1854 he was offered, but declined, the bishopric of Salisbury. His best-known work was *Undesigned Coincidences in the Writings both of the Old and New Testaments* (1833). See Prof. Selwyn's memoir of him (1856).

Blunt, Wilfrid Scawen (1840-1922), Eng. traveller and poet, b. Aug. 17 at Petworth House, Sussex; son of Francis Scawen B. (of the Grenadier Guards, who fought at Corunna); educated at Stonyhurst and St. Mary's, Oscott. From 1858 to 1869 he was in the diplomatic service. In the latter year he married Lady Anne Noel, daughter of the earl of Lovelace and granddaughter of Lord Byron. In 1872 he succeeded to the Crabbet estates on the death of his elder brother. He then travelled for some years in the E. with his wife, visiting Arabia, Syria, Algeria, Egypt, Persia, etc.; and some of these voyages are described in books by Lady Anne. In 1885 and 1886 he unsuccessfully contested Cambridge in the Home Rule interest, and in 1887 he was arrested and imprisoned for 2 months in Ireland, in connection with agitations on Lord Clanricarde's estates. At Crabbet, he bred Arab race-horses. His best-known

vol. of poems is the *Love Sonnets of Proteus* (1880); and his most considerable historical work *The Secret History of the English Occupation of Egypt*, 1907; the sequel to which is *Gordon at Khartoum*, 1911. Among his other works may be mentioned: *The Future of Islam*, 1882; *The Wind and the Whirlwind*, 1883; *In Vinculis*, 1889; *Esther*, 1892; *Griselda: a Society Novel in Rhymed Verse*, 1893; *Salan Absolved: a Mystery*, 1899; *India under Ripon*, 1909; *The Land War in Ireland*, 1912. A complete ed. of his poetical works was pub., 1914; and 2 thick vols., *My Diaries*, appeared 1919-20; they contain analyses of the motives behind Brit. imperialism, and close with a disparagement of the 'case' for entering the war in 1914.

Bluntschli, Johann Kaspar (1808-81), Ger. jurist, b. at Zürich, and studied at the univs. of Berlin and Bonn, at the latter of which he graduated LL.D. in 1829. He then returned to Zürich and took part in the political war which was then disturbing Switzerland. He became prof. of law at Zürich Univ., and also a member of the parliament. Here he was soon recognised as leader of the moderate Conservative party. The impossibility of bringing about acceptance of his views on gov. led him to resign, and in 1848 he went to Munich, where he became prof. of constitutional law. Here he pub. his chief work on jurisprudence, the *Allgemeines Staatsrecht* (5th ed., 1876). In 1861 B. was appointed prof. of political science at Heidelberg, where he again entered the political arena. At this time B. ranked as one of the greatest authorities on international law. In 1873 he founded the Institute of International Law at Ghent. Among his works are: *Geschichte der Republik Zürich*, 1847; *Das moderne Kriebsrecht*, 1866; *Das moderne Völkerrecht*, 1868.

Blushing, a sudden suffusion of blood over the skin, caused by sensations of shame or modesty. Usually it affects only face and neck, but sometimes arms and chest also. It produces heat and a sense of discomfort, and serves to illustrate the intimate control exercised by the nervous system over the blood.

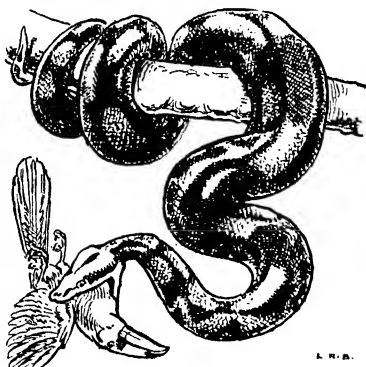
Blysmus, genus of Cyperaceæ. The Brit. flora contains two species, *B. compressus* or broad-leaved, found in boggy pastures, and *B. rufus*, or narrow-leaved B., which occurs in marshes near the sea. Both are tolerably common, the latter species especially in Scotland.

Blyth, seaport of Northumberland, England, 9 m. E.S.E. of Morpeth, at mouth of R. Blyth. It exports the coal mined in the dist., and does some ship-building. It is also a watering-place. Pop. 32,000.

B'nai B'rith, Independent Order of, a Jewish fraternal society founded in 1843 at New York by some Ger. Jews under Henry Jones. It has a number of grand and over 400 subordinate lodges distributed over the U.S.A., Germany, Austria, Hungary, Rumania, Egypt, and Palestine, and a membership of nearly 50,000. The order inculcates a high

morality regardless of dogma and politics, and has estab. a large number of charitable and public institutions, notably the Orphan Asylum in Cleveland, the Yonkers Home for the aged and infirm, and the Marmonides Library in New York City.

Boa, name popularly given to any of those large snakes of America and the Old World which, having no poison fangs, kill by constriction. Strictly the term applies only to the New World constrictors, the name python being proper to the others. The Boidæ are distinguished from the pythons by the presence of teeth in the premaxilla and the absence of supra-orbital bones. The commonest of the



BOA

species is the *B. constrictor*, about 12 ft. in length, brownish-grey in colour with lines and blotches. The B. attacks even large mammals, crushes the bones of its victim by pressure, covers it with saliva, and swallows it whole. A long period of torpor follows. Most of the Bs. bear their young alive.

Boabdil, from the name Abu Abdullah the last Moorish king of Granada, called also *El Chico*, which means The Little. In 1482 his father, Abu'l Hassan, was dethroned and banished from the country, and B. was proclaimed king. In 1483 he invaded Castile, but was captured at Lucena, and became trib. to Ferdinand and Isabella of Castile. After that he spent sev. years in warring against his father and his uncle. In 1492 the king of Castile, after besieging Granada, captured it. *El último suspiro del Moro* (the last sigh of the Moor) is shown as the place from which B. last viewed Granada.

Boac, or **Boag**, tn. on W. coast of Marinduque Is., Philippines. Pop. 15,000.

Boaden, James (1763-1839), Eng. author; editor of the *Oracle* newspaper in 1789. He studied at the Middle Temple, wrote sev. successful plays, and in 1796 pub. an exposure of the Ireland Shakespearean forgeries. In 1831 he pub. a work on Shakespearean sonnets, identifying Mr. W. H. with William Herbert (afterwards third earl of Pembroke).

Boadicea, or **Boudicea**, Brit. queen in the first century A.D., the wife of Prasutagus who ruled over the Iceni in E. Anglia. Dying, he made his wife and daughters joint heirs with the Rom. emperor, Nero, to his property, probably from a mistaken idea that this would save them at least some share of his possessions. In place of this, however, his queen was insulted, his daughters were outraged, and his subjects goaded by insult and oppression into rebellion. Suetonius Paulinus was with the legions suppressing the Druids of Mona. E. Anglia burst into the flame of rebellion. The Rom. garrisons of St. Albans and Colchester were annihilated, London was razed to the ground, and the whole of S.E. Britain up in revolt. Paulinus returned without waiting for his troops, but could do nothing alone to stem the rebellion. Collecting all his forces save the legion from Caerleon whose general failed to obey orders, he met the Britons at some unknown place, but probably between London and Chester, and practically annihilated them. B. took poison, and the rebellion, which owed much to her leadership, was entirely suppressed.

Boanerges, a name given by Christ to the 2 disciples, James and John, the sons of Zebedee. See Mark iii. 17. The word is interpreted in the Bible as 'sons of thunder,' and was probably applied as denoting strength of character and zeal.



WILD BOAR AND YOUNG

Boar, Wild. The commonest species is the *Sus scrofa*, larger in size than the domestic pig, and characterised by its long tusks, prominent pig-like snout, and short, thick, woolly hair closely interspersed with bristles, which on the neck form a thick mane. These bristles are brownish-black in colour, the shorter hairs being grey. The animal is about 3 ft. in height, and far surpasses the domestic swine in strength and swiftness. It is native in Europe, and is now found over Europe, N. Africa, and parts of Asia. It was originally common in the Brit. Isles, and traces of it are found at Chartley Forest, Staffordshire, as late as 1683, and

it survived even later in Ireland and Scotland. It is still found in most parts of the Continent, where it is common in damp and marshy ground. B. in early times proved very destructive to crops, for they are voracious and omnivorous, and feed chiefly by night. Solid benefit was, therefore, to be gained by hunting them, and their ferocity gave the business the touch of danger necessary to make it a sport. Under the Norman kings the B. was one of those beasts the killing of which without right was punishable by death. B.-hunting was then a lordly sport, and a vivid account of its pleasures is given in the fourteenth-century poem of *Sir Gawayne and the Green Knight*. The B. was hunted on foot and on horseback with dogs, most commonly B.-hounds. The B.'s head was then accounted a great delicacy, and its entrance at the Christmas festivities was greeted with elaborate ceremonial and many carols. In heraldry it is a well-known cognisance. Other species of *Sus* are known: *S. vittatus*, *S. verrucosus*, and *S. barbatus*, all Asiatic.

Board, name generally given to a body of persons appointed jointly to control some public office, bank, or railway. Thus, for example, when referring collectively to the directors of a railway or a bank it is customary to refer to the B. of directors. Similarly the Lords of the Treasury form the B. of Treasury, whilst the name is or was in common employment, having the same meaning, in such terms as the B. of Guardians, the Local Gov. B., the B. of Trade, and in Scotland the School B. The chief State dept. to bear this name is the B. of Trade (see TRADE, BOARD OF). The former B. of Education and the B. of Agriculture and Fisheries have been estab. as ministries (see EDUCATION, MINISTRY OF; AGRICULTURE AND FISHERIES, MINISTRY OF). Similarly, the B. of Works, later the Office of Works and Public Buildings, is also estab. as a ministry (see WORKS, MINISTRY OF), and the former Local Gov. B. is now known as the Ministry of Health (see HEALTH, MINISTRY OF). Other important Bs. are the London Passenger Transport B., the body which, in 1933, became the sole owning and organising authority for the omnibus, train, and tube system of the metropolis and suburbs (see LONDON TRANSPORT EXECUTIVE); and the Central Electricity B., which was estab. by Act of Parliament in 1926 to reorganise, unify, and develop the generation of electricity in Great Britain (see CENTRAL ELECTRICITY BOARD).

Boarding, in naval tactics, term used for an assault made by one ship upon another. It is now, however, not much practised. B. may be performed on different parts of the ship according to the position of the ships.

Boardman, George Dana (1801-31), Amer. missionary, b. at Livermore, Me.; went to India in 1825 as a Baptist missionary, and later did good work among the Burmese Karens.

Boardman, George Dana (1828-1903), Amer. Baptist minister, son of above, travelled alone from Burma to America at

the age of 6. After graduating at Brown Univ. he held pastorates at Rochester and Philadelphia, and became president of the Amer. Baptist Missionary Union (1880-84).

Board of Trade Unit is now known as the kilowatt hr. It means 1000 amperes.

Boar-fish (*Capros*), genus of fishes chiefly found in the Mediterranean. It has a flat oval body, similar to that of the related John Dory. Its body is carmine, with 7 transverse orange bands on the back, and the name is derived from its projecting hog-like snout.

Boarmia, genus of lepidopterous insects of the family Geometridæ. All the species of these moths are of an ashy colour, or white minutely dotted with brown, and the large wings, when at rest, are placed horizontally. Many species are found near London.

Boar's Hill, vil. of Berkshire, England, 4 m. N. of Abingdon. The hill itself is 550 ft. high. On it is Ripon Hall, a college for candidates for holy orders in the Church of England.

Boas, Franz (1858-1942), Amer. anthropologist, b. at Minden, Germany; educated at Heidelberg, Bonn, and Kiel univs. In 1883-84 he explored Baffin Land, and the following year he became assistant curator of the Royal Ethnological Museum, Berlin, and *docent* of geography at Berlin Univ. In 1886 he went to N. America to pursue his anthropological studies, and finally settled in the U.S.A., becoming, in 1899, the first prof. of anthropology at Colombia Univ. He was a member of the foremost scientific societies in the U.S.A., and hon. fellow of the Royal Anthropological Institute, London. He held hon. degrees at a number of univs. in Europe, including Oxford. His work on the statistical analysis of racial physique, in which he was a pioneer, is embodied in his 2 books, *Changes in Bodily Form of Descendants of Immigrants* (1912) and *Materials for the Study of Inheritance in Man* (1928). He was a vigorous opponent of Nazi 'racial' theories. Other works include: *The Mind of Primitive Man*, 1911; *Primitive Art*, 1927; *Anthropology and Modern Life*, 1929-32.

Boat (O.E. *bāt*), open vessel used for travel on the water, generally propelled either by sail or by oar. The term 'ship' is generally reserved for larger vessels. The origin of vessels for conveyance on water may doubtless be traced to a double genesis. When primitive man wished for some such thing, 2 means must have suggested themselves to him. He could hew down a tree and hollow it out, or he could collect wood and bind the pieces together. Hence arose the 'dug-out,' still so common a B. among savage tribes, and the raft, the construction of an elaborate form of which is described at length in the *Odyssey*. From this last came the junk and punt and all the various kinds of flat-bottomed craft. Another stage in development may be the coracle of the ancients, consisting of a wicker framework over which skin is stretched. By another step, the framework would be

made stronger and the covering made of wood. There are differences in the ways of laying on the planks in the modern small B., viz., the planks may be laid edge to edge, so as to present a smooth exterior; the B. is then said to be carvel-built; or the planks may overlap, and the B. is described as clinker-built. Types of Bs. vary in every part of the world and for every different class of work. Some are swift, some roomy, some for pleasure, some for rough weather. In the Royal Navy the following Bs. are used, though here, as in other branches of service, steam and motor are taking the place of wind and oar, which now propel only the smallest Bs. The *pinnace*, a B. used for the sub-officers, is generally about 35 ft. long, carrying 8 oars. The *cutter*, about 30 ft. long, carries more men and has greater breadth. The *gig* is used on expeditions requiring speed. It is narrower than the pinnace, is 30 ft. in length, and weighs about 8 cwt. The *dinghy* is a small B. of 3 cwt., about 13 ft. long, and easily rowed by 2 men. Bs. vary considerably in shape and size round the coast of Great Britain. On the Thames they are lightly built, but on the coast the necessity of pulling them up over rough ground demands that they should be strong and generally clinker-built. Round the coast of Kent and Sussex short, square-sterned skiffs are in favour, and further W. along this coast the Bs. get deeper and larger, and the carvel-built is still common. In the N.E. of England and at the N. of Scotland various old types of Bs. survive. The *coble*, for example, is a shallow-built, flat-bottomed B. with a very curious rudder, built for launching from the beach in rough weather. These show traces of Norse and Dutch influence. Pleasure Bs. of most kinds may be seen on the Thames, and the following are easily noticeable: the randan skiff about 30 ft. long, 4 ft. beam, for 1 sculler between 2 rowers, and various skiffs, eights, fours, gigs, and punts. These are of varying degrees of lightness, and this type finds its best expression in the racing eights seen in the Oxford and Cambridge boat race.

Boat, Life, see **LIFEROATS**.

Boatbill, or **Boatbilled Heron** (*Crocroma cochlearia*), bird belonging to the Ardeidae, or heron family, but differing from allied species in its broad, flat, brown bill. It is a night-flying bird, feeds on fish and worms, and is a native of Brazil.

Boat-fly, name of sev. species of hemipterous insects of the family Notonectidae. They are aquatic, swim on their backs live on animal matter, hibernate in mud, and when they dive into water carry with them a supply of air. *Notonecta glauca*, the water-boatman, is found in Britain.

Boat Race, see **ROWING**.

Boatswain (pronounced 'bo'sun,' from *boat* and *swain*, a servant), warrant officer of the Royal Navy. In the days of sailing ships, he had charge particularly of the boats, rigging, sails, cables, anchors, flags, and cordage. It was his duty to examine these carefully, especially when the vessel

was in dock, to keep them in a state of repair, and to make report of their number and condition. By means of his whistle, which gradually came to be looked on as his badge of office, he summoned the crew to their duties. He shared in the work of the ship, and took a place in one of the watches. He himself gives no orders, but acts as the officer of the first lieutenant. His work has of course been considerably modified by the general use of steam.

Boavista, or **Bonavista**, an is. of Africa, the easternmost of the Cape Verde group. It has a railway and 3 ports—Porto Sal Rey on the W., Porto do Norte on the N., and Porto Curralinho on the S. The soil is not fertile, and the cultivation is generally neglected. Area 250 sq. m. Pop. 3000.

Boaz, a Bethlehemite from whom Jesus Christ was a descendant in the direct line (Matt. i. 5). He married Ruth, and they were the great-grandparents of David.

Boaz and **Jachin** (see 1 Kings vii. 21), the names given to 2 brazen pillars in the porch of Solomon's temple in Jerusalem.

Bobadil, Captain, in Ben Jonson's comedy, *Every Man in his Humour*. He is a bragging, blustering fellow.

Bobbili, tn. in the Madras Presidency, India; 36 m. from Chicacole to the W.N.W.

Bobbin, a small wooden or metal roller, flanged at both ends (rarely at one only), and bored through the axis, so that it may be placed on a spindle. The commonest form is the spool on which ordinary sewing thread is wound, and an example of the metal B. is to be found in that which carries the thread in a sewing machine. Bs. of various sizes and shapes are used for the different stages of spinning flax, wool yarn, etc., the largest being those used for the slubbing frames, where the cotton passes from the lap shape in which the carder has left it into loose strands. These are often 15 in. long. Paper tubes are now often used where Bs. were originally employed. In lace-making and some other industries a peculiar type of metal B. is used.

Bobbio, tn. and episcopal see of Lombardy, Italy, in prov. of Pavia. Its origin is traced to a monastery erected in 612 by St. Columban, whose famous library, now mostly at the Vatican, the city once possessed. Other parts of the library are at Milan and Turin, but many important documents still remain at the cathedral. Pop. 5000.

Bober, riv. of Silesia and Brandenburg, Germany, the chief trib. of the Oder. It rises on the N. side of the Riesengebirge, and after passing Landeshut, Bunzlau, and Sagan, flows into the Oder after a course of 160 m. at the tn. of Crossen.

Boblingen, tn. in Württemberg, Germany. It is situated 11 m. to the S.W. of Stuttgart. Pop. 7500.

Bobolink, name given to a N. Amer. bird of the family Icteridae; it is the *Icterus acipennis* of Bonaparte and *Dolichonyx oryzivorus* of Swainson. It differs from the orioles or starlings in having a long middle toe and pointed tail-

feathers, and is noted for its curious song. Others of its names are rice troupial, reed-bird, skunk-bird, and rice bunting.

Bobrinets, tn. of Russia, about 120 m. N. of Kherson. Pop. 12,000.

Bobruisk, tn. of Byelorussia, U.S.S.R., situated 80 m. S.W. of Minsk; formerly an important fortress. It is on the Beresina and possesses a railway station. It was unsuccessfully bombarded by Napoleon in 1812, and its fortifications were then increased. They have now been abolished as antiquated. During the Second World War it was occupied by the Gers., and retaken by the Russians on July 1, 1944. Pop. 64,000.

Bobsleigh, see under TOBOGGANING.

Boceage, name of 2 dists. in France; the first, Norman B., formed the middle part of Bessin below the Orne, but is now part of Calvados. Here occurred much of the severest fighting after the Anglo-Amer. forces had landed in Normandy in June 1944 (see WESTERN FRONT in SECOND WORLD WAR). The second, Vendean B., formed part of the prov. of Poitou, but now is included in the dept. of Vendée.

Boceage, Manoel Maria Barbosa de (1765-1805), Portuguese poet, b. at Setubal. Though from the beginning he showed a remarkable talent for versification, he entered the navy, and his adventures carried him as far as Brazil and the Indies. Before this, his numerous love affairs had given plenty of scope for the exercise of his special gift, but on his return in 1790, the style of his verse had changed to satire. He was endowed with great powers of improvisation. Though he wrote eclogues, idylls, epistles, songs, etc., it was in the sonnet that he excelled and gained a place among the best writers of this genre in Portugal. He also left a number of unfinished tragedies and some translations. His works were pub. in 8 vols. in 1875-76.

Boças del Toro, or **Booa del Toro**, tn. and port of Panama, situate in the lagoon or bay of Chiriqui. The bay forms a good natural harbour and the surrounding country is fertile, producing fruits, coconuts, and India-rubber. Pop. 5000.

Boccaccio, Giovanni (1313-75), It. novelist and poet. It is generally accepted that he was the natural son of Boccaccio di Chellino da Certaldo, a Florentine merchant who had an estate at Certaldo in the Val d'Elsa, 20 m. from Florence, and that his mother was a Fr. girl whom his father married in Paris after B.'s birth there in 1313 or 1314. B. was educated in Florence under Giovanni da Strada, an esteemed Florentine teacher of grammar, father of the poet of the same name. As a young man he went to Naples, where he visited the tomb of Virgil, and where it seems he was a favourite with the ladies. It is thought that he there fell in love in the church of St. Laurence with a young married lady named Maria d'Aquino, said to have been the natural daughter of King Robert of Naples. His frequently recurring character Fiammetta, who represents Maria, has lent colour to this and to similar stories, especially as he talks of the ladies at church in his *Fiammetta* and

again in his prose novel *Filocolo*, which relates what is assumed to be the story of his love. Also there is similar internal evidence in his *Teseide*, a poem in 12 books, relating to the fabulous adventures of Theseus. This latter has the merit of being the first romantic novel to appear in the It. language in *ottava rima*, a metre adopted by Tasso and Ariosto. It is from this poem that Chaucer borrowed his *Knight's Tale*, to which Dryden gave a new name, and recast it as *Palamon and Arcite*. Also in *ottava rima* is his narrative poem, *Filostrato*, the great interest of which, for the Eng. reader, lies in the fact that Chaucer, in his *Troilus and Cryseide*, boldly adopted the main features of B.'s plot besides literally translating parts of



GIOVANNI BOCCACCIO

B.'s poem without acknowledgment of his source. In 1341 B. returned from Naples to Florence, where he applied himself to the study of astronomy and Gk. According to some, he was in Naples again in 1344, and resided there for some years, writing many of his works and frequently appearing at court. Others say he went to Sicily to improve his knowledge of Gk., but this is less probable. What seems incontrovertible is that the Florentines, who recognised his abilities, sent him on an embassy to Romagna in 1346; but he was there only 1 year, for, in 1348, on the news of his father's death, he returned to Florence to take up his inheritance, a great part of which he spent in purchasing MSS. both in Gk. and Lat. In 1359 he was in Milan on a visit to Petrarch, with whom he had formed a friendship some years earlier. He subsequently estab. a professorship of Gk. literature in Florence. In 1365 the Florentines sent him on an embassy to Pope Urban V. at Avignon, and on his return appointed him one of the Florentine magistrates, an office he retained for 2 years, when he was

again sent to the Pope, this time to Rome. There is no doubt that B. was strongly influenced by Petrarch, and his numerous and varied works, which show that he was an ardent exponent of the new learning, support this view. He is best known by the *Decameron*, 1348-58, a collection of prose tales, supposed to have been told by courtiers and ladies in retirement during the plague at Florence in 1348. This work showed an enormous advance in style and arrangement on previous fictional writing and influenced European literature to a considerable extent. He also wrote numerous romances and pastorals in verse and prose, and sev. Lat. treatises. He left his valuable library to his confessor Martino da Signa for life and then to the students of the convent of the Spirita Sancta, in Florence. See A. Gustarelli, *Giovanni Boccaccio* (Milan), 1929; T. C. Chubb, *The Life of Giovanni Boccaccio*, 1930; C. Carswell, *The Tranquil Heart: a Portrait of Giovanni Boccaccio*, 1937.

Boccage, Marie Anne, Lady Lepage du (1710-1802), Fr. poet, author of *Le Paradis terrestre* (1748), written in imitation of Milton. She went to Ferney to visit Voltaire, who praised her fulsomely, but whether the praise was sincere or not has been disputed. Her other works are *La Colombiade*, 1756; *Letters concerning Voltaire*, 1770.

Boccacini, Trajano (1556-1613), It. satirist, was governor of sev. tns. of the papal states between 1608 and 1611. He retired to Venice and spent his last years in writing poetry. He was hostile to the Sp. nation, and in fact the only gov. which he did not attack in his writings was that of Venice, for which he appears to have had an affection. His prin. work is *Neus of Parnassus* (*Ragguagli di Parnaso*), a satirical work dealing in a brilliant fashion with contemporary questions and personages, both private and political. An Eng. version of this, together with the sequel, *La Pietra del Paragone Politico*, which was left unfinished by him, was pub. in England by Henry, earl of Monmouth. The story that he was sand-bagged to death by a band of Sp. bravoes has no foundation in fact; he d. from the effects of colic and fever at Venice.

Boccanera, Simone, Genoese statesman of fourteenth century. He was elected doge of Genoa for life in 1339, but compelled to resign in 1344, and lived in retirement at Pisa till 1356, when he was re-elected. He is said to have been poisoned. He gained numerous victories over the Turks, Tartars, and Moors.

Bocca Tigris (Portuguese form of the Chinese *Hu-mun*, tiger's mouth), part of the estuary of the Canton R. On an is. in it are the Bogue forts, taken by the Brit. in 1841 and 1856.

Boccherini, Luigi (1743-1805), It. cellist and composer, b. at Lucca; received his first lessons from his father, a double-bass player. Went to Rome in 1757 to improve his art; back in Lucca, 1764; in Paris, 1768, and then in Madrid, where he was patronised by the king's brother, the

Infante Don Luis. Chamber composer to Frederick William II. of Prussia, 1787-97; returned to Spain and fell on evil days. He is 'considered a master of chamber music, of which he wrote great quantities. His sacred music includes the *Stabat Mater*, 2 oratorios, a Christmas cantata and motets. Wrote 2 operas, one at Lucca and another, *Clementina*, at Madrid. His other compositions include a score of symphonies; duets, trios, quartets, quintets, and sextets for strings; four cello concertos, and sonatas for the violin, violoncello, and pianoforte.

Bochart, Samuel (1599-1667), Fr. theologian and philologist, was pastor of a church at Caen. His *Sacred Geography*, which he pub. about 1630, added so much to his fame that Queen Christina of Sweden invited him to Stockholm. In 1653 he became a prof. at the recently founded academy of Caen, a post which he held till his death. His works include: *De Animalibus Sanctæ Scripturæ*, 1663; *Reply to the Letters of M. de la Barre, Jesuit*, 1662.

Boche, Fr. slang term for German, which came into general use during the War of 1914-18, but had existed previously with the same connotation. The term so applied would appear to have originated some years before 1870, beginning in the workshop and spreading upwards until it became commonly adopted. It first signified a rake or debauchee, and, by a curious transition of meaning, came to denote women of ill fame. After 1870 these connotations disappear. In an 1874 publication devoted to the *langue verte* of the art of printing will be found *l'ête de Boche* with this glossary note: 'Special expression designating the Gers, because they found great difficulty when making up galleys into pages in understanding the direction of their predecessors on the work.' This may, of course, only mean that the Ger. compositors were naturally thwarted by such linguistic stumbling-blocks as might have upset any foreigner. But the connotation of slowness of apprehension is there notwithstanding, and is corroborated by sev. dictionaries of *argot* of later date, which speak of *l'ête de Boche* as equivalent to 'dull brain,' 'clodpate,' without any ethnical association. That association, however, is readily supplied by the equivalent term *Alboche* (a fusion of *Allemand* and *boche*), which soon became the accepted synonym for a Ger.

Bochmann, Alex. H. Gregor von, Russian painter, b. at Nehat, Estonia, 1850. He was a landscape painter, and studied from 1868 at Düsseldorf Academy, having a studio there, 1871. He took yearly study-trips to his native land, Holland, and Belgium. Among his works are: 'Church in Esthland,' 1874; 'Sluice in Holland,' 'Potato Harvest in Esthland,' 'Fishmarket at Reval,' 'Wharf in Holland,' 1878.

Bochnia, tn. of Poland, about 25 m. by rail S.E. of Cracow; has salt and gypsum mines in the vicinity. Pop. 11,000.

Bocholt, tn. of Germany in the W. of the prov. of Westphalia, on the R. Aa, 12

m. N. of Wesel. Its fine sixteenth-century tn. hall was heavily damaged in 1945. In the invasion of Germany in the same year B. was captured by the Brit. Second Army on Mar. 31. Pop. 32,000.

Bochum, tn. of Germany, Land N.-Rhine Westphalia, 35 m. N.E. of Dortmund. It became an important industrial centre, particularly of the iron and steel industries. B. is also noted for food-processing and has breweries, felt, and brick manufs. There are coal mines in the vicinity. The tn. was heavily bombed by the R.A.F. in the Second World War, especially on June 12, 1943, when 4000 lb. of bombs were dropped at the rate of five a min. Pop. of dist., 245,300.

Bock, Fedor von (b. 1880), Ger. soldier, b. at Kustrin, son of a distinguished general; attended the Potsdam Cadet Academy, and entered the First World War as a staff officer. In 1917 he commanded an infantry battalion, winning the *pour le mérite* decoration for valour. In 1938 he reached the rank of general and commanded the armies that invaded Austria. In the Polish campaign (1939) he commanded the N. armies invading from E. Prussia. In France (1940) he directed the thrust along the lower Somme. Promoted to rank of field marshal. Commanded the armies on the central front against Marshal Timoshenko in the Ger. invasion of Russia (1941). A fanatical, harsh, typical Prussian soldier and a military ascetic. In 1942 he was relieved of his command on account of his failure to capture Stalin-grad.

Bockenheim, industrial suburb on N.W. side of Frankfurt-on-the-Main.

Böckh, see BOECKH.

Böcking, Eduard (1802-70), Ger. lawyer, b. at Trarbach. He was appointed prof. of law at Bonn in 1835, and wrote on many legal subjects. His pub. works include *Notitia Dignitatum Utriusque Imperii* in 5 vols., 1839-50, and *Institutiones des Römischen Privatrechts*.

Böckingen, tn. in the dist. of Heilbronn in Württemberg, Germany. Pop. 12,000.

Böcklin, Arnold (1827-1901), Swiss painter, son of a silk-worker at Basle. In 1845 he went to study at Düsseldorf, under Schirmer. He worked for some time at the Louvre, and afterwards resided for some years in Rome, where he married. In 1856 he went to Munich, where his first great success, 'Pan amongst the Reeds,' was exhibited and bought for the Pinakothek. This and other mythological pictures gained him an appointment at the Weimar Academy, which he held for 2 years. In 1862 he returned to Rome, where he painted 'A Roman Tavern,' 'A Villa on the Seashore,' and other pictures. He went back to Basle in 1868 and was engaged in painting frescoes for the gallery there. In Munich, where he was from 1871 to 1874, his paintings, in which he introduced imaginary beings beyond the bounds of classical mythology, at first aroused some criticism. He d. at San Domenico, near Florence.

Boc-land (from A.-S. *bōc*, a book, i.e.

book-land), an early Eng. method of land tenure, better described now as charter-land or deed-land. B. was folk-land which was allotted by deed to some person in private ownership by the king and council. It differs from the *ethel* (Eng. homestead), which was land cut off from the folk-land and made the perpetual possession of its owner and his descendants, and which depended on no charter for its possession. B. could be held by the king or by ecclesiastics, and less frequently by a lay subject. It was often granted in perpetuity to a church or monastery, for which it could be held in trust by a layman. During the lifetime of its owner it could be alienated or disposed of, but only by *boc*, as it had been received.

Bocskay, Stephen (1556-1606), prince of Transylvania. He was the leader of a successful rebellion against Rudolf II. of Hungary in 1604, and elected prince of Transylvania by the Hungarian diet. Two years later a peace was concluded with the archduke Matthias, granting freedom of religious worship to the Protestants of Hungary.

Bod (Boad), a trib. state of Orissa, India. It is bounded on the N. by the R. Mahannuddy. Its area is 2064 sq. m. B. proper is ruled by a native rajah. Its cap. is Bod, a tn. situated on the Mahanuddy. Its pop. is 108,868.

Boddam, a fishing vil. situated 3 m. S. of Peterhead, N.E. Aberdeenshire. Pop. 1000.

Boddle, *see* BODLE.

Bode, The Barons de, are known in England because of a claim for indemnity often presented before parliament. A certain de B., b. of a baron of the Holy Rom. Empire and an Eng. mother, was included among those who were to be indemnified for confiscations at the time of the Revolution from the payment made by France in 1814. In 1852 the gov. refused to recognise the claim preferred by this man's son, because he was not a Brit. subject, and his lands had been held under Ger. tenure.

Bode, Johann Elert (1747-1826), Ger. astronomer, b. at Hamburg. In 1772 he was made astronomer of the academy at Berlin, and from 1786 to 1825 was director of the observatory there. His name is best known as the propounder of B.'s law, on the proportion of the respective distances of the planets from the sun. The law states that the proportionate distances of the planets from the sun are found by adding 4 to each term of the series 0, 3, 6, 12, 24, etc., which omitting the first term forms a geometric series with 384 as last term. When he first advanced this rule, which still remains empirical, it was found that a planet should occur between Mars and Jupiter, and a group was subsequently (1801) discovered there. The rule, then, holds good, excepting its application to Neptune, whose distance from the sun is less than B.'s law requires. Among B.'s works may be named: *Anleitung zur Kenntniss des gestirnten Himmels* (1768), *Sammlung astronomischer Tafeln* (1776),

Erläuterung der Sternkunde (1776), *Uranographia* (1801).

Bode, Wilhelm von (1845-1929), Ger. art expert. He founded the dept. of Christian sculpture, Berlin, 1883, and later became director of the Prussian museums. He figured in a dispute over the genuineness of a bust he bought for the museums and which he asserted to be the work of Da Vinci. His reputation, however, did not suffer from this error, for he was considered in other countries besides his own to be the best living authority on old masters. He continued as director of Prussian museums under the republic till 1920, when he retired to take up the less onerous duties of curator in the Kaiser Friedrich Museum.

Bodegas, *see* BARAHYO.

Bodenbach, or Podmokly, tn. of Czechoslovakia, on R. Elbe, near the Saxon frontier, and on the opposite bank to Tetschen. It has important industries. The 2 tns. are connected by bridges. Pop. 15,000.

Boden-see, *see* CONSTANCE, LAKE.

Bodenstedt, Friedrich Martin von (1819-1892), Ger. poet and translator, b. at Peine, Hanover. In 1840 he became tutor to the family of Prince Galitzin in Moscow, and after 4 years went to Tiflis, where he studied Persian literature. From this sprang the most popular of his works, *Die Lieder des Mirza Schaffy* (1851), a vol. of original poetry which purported to be trans. from an E. work. Its success in Germany was enormous. In 1854 he was made prof. of the Slav languages at Munich. In 1858 he gave up this post and took the chair of O.E. language and literature. During the years that followed, he pub. a translation of Shakespeare's plays and poems, and sev. other valuable works on Eng. literature.

Bodh-Gaya, *see* BUDDH-GAYA.

Bodiam, a vil. in E. Sussex, England, on the Rother R. Has the ruins of a fourteenth-century castle.

Bodichon, Barbara Leigh (1827-90), Eng. educationist, b. at Watlington, Norfolk, on Apr. 8, the daughter of Benjamin Smith, for many years M.P. for Norwich. In 1857 she was married to Dr. Eugene Bodichon. She was a strong advocate for women's rights, and took much interest in univ. education for women, being one of the founders of Girton College. She was also a talented painter of landscapes in water-colour.

Bodin, Jean (1530-96), Fr. philosopher and economist, b. at Angers. Having studied law at Toulouse, he became prof. of jurisprudence at that univ., until in 1561 he came to Paris to secure the favour of the king. Before this he had trans. Opian's *Cynegeticon* into Lat. verse with a commentary. In 1576 he was made king's advocate at Laon, and in the same years he was elected by the *tiers état* of Vermandois as its delegate to the States General of Blois. In this assembly he defended the rights of the people against all restrictions, whether imposed by king, clergy, or nobility. In 1581 he visited England as secretary to the duc d'Alençon, when the duke was seeking the hand

of Queen Elizabeth. On his return the rest of his life was spent at Laon, where his influence was such that he persuaded the citizens to declare for the League in 1589 and for Henry IV. in 1594. He *d.* of the plague. His greatest work was the *Six livres de la République*, 1576, the first important attempt in modern times to construct a complete system of political science. Other works are: *Oratio de instituenda in republica juventute*, 1559; *Methodus ad facilem historiarum cognitionem*, 1566; *Universale Naturæ Theatrum*, 1596; and the *Colloquium Heptaplomeres de abditis rerum sublimium arcanis*, pub. 1857. Though so liberal in opinion as to be accounted an atheist, B. was a firm believer in witchcraft. See



John H. Stone

THE RADCLIFFE CAMERA, OXFORD

H. Baudrillart, *J. Bodin et son temps* (1853), and the life by R. Chauviré (1916); and H. Heller, *Die Souveränität* (1927), F. Meinecke, *Die Idee der Staatsraison in der neuen Geschichte* (1924), and F. Frist, *Jean Bodins Weltbild und Staatslehre*, 1931.

Bodincomagus, see CASALE.

Bodishat, see BARLAAM AND JOSAPHAT.

Bodle, or Boddle, an anct. Scottish copper coin of time of Charles II., worth about one-sixth of an Eng. penny. Its name is said to be derived from Bothwell the mint master. Word only survives in the phrase 'not to care a bodle.'

Bodleian Library, univ. library of Oxford. The original univ. library was re-formed and enlarged in 1598 by the addition of Sir Thomas Bodley's library, which had been given to him by the Earl of Essex. This priceless library had originally belonged to Bishop Jerome Osorius of Faro, and had been seized by Essex while on an expedition to Cadiz. Sir Thomas Bodley also induced others to contribute largely, and in 1602 the library contained about 2000 vols.

When Bodley *d.* he left a considerable amount of property to increase the library and to maintain it. His example found many imitators, and amongst the great patrons of the library may be mentioned Archbishop Laud, Lord Fairfax, Richard Gough, Richard Rawlinson, and the Rev. Robert Mason. The library is excelled by few in Europe, and its oriental MSS. are probably unsurpassed in the world. It contains the most valuable documents for the hist. and literature of the country. The library has now well over a million vols. and over 40,000 MSS. By various copyright acts it has the right to a copy of every vol. entered at Stationers' Hall. The Radcliffe Camera originally housed in 1749 the Radcliffe library of physics. In 1860 this library was removed, and the Camera was permitted to be used as a reading room for the B. L. In 1927 the Camera was made over entirely to the B. L. An extension of the library has been built in Broad Street, which is connected with the main library by a tunnel.

Bodley, George Frederic (1827-1907), Eng. architect, *b.* at Hull. Pupil of Sir Gilbert Scott, and achieved the reputation of being the chief Eng. exponent of fourteenth-century Gothic. Specialised in eccles. architecture both in England and abroad. Some of his works are the new buildings of Magdalen College, Oxford; Queen's College Chapel, Cambridge; Marlborough College Chapel; Holy Trinity, Kensington; Eton Mission Church, Hackney Wick; Eccleston Church; and the London School Board offices. In collaboration with James Vaughan he designed the cathedral at Washington (dist. of Columbia) and the cathedrals at San Francisco and in Tasmania. A.R.A., 1881; R.A., 1902.

Bodley, John Edward Courtenay (1853-1925), Eng. historian, educated at Balliol College, Oxford. He was called to the Bar in 1874, and from 1882 to 1885 was private secretary to the president of the Local Gov. Board, being also from 1884 to 1885 the secretary to the Royal Commission on Housing of the Working Classes. He was a corresponding member of the Fr. Institute, and wrote a number of books on France. The most important is in 2 vols.: vol. 1. *The Revolution and Modern France*; vol. 2. *The Parliamentary System* (1898). Other books are *L'Anglo-manie et les traditions françaises* (1899); *The Church in France* (1906); *L'Âge mécanique et le déclin de l'idéalisme en France* (1913); *The Romance of the Battle Line in France* (1920); also *The Coronation of Edward VII.*, written by His Majesty's command in 1903.

Bodley, Sir Thomas (1545-1613), Eng. diplomatist, educated at Genova and Merton College, Oxford. He was made a fellow of his college, and in the years between 1580 and 1597 he was employed in various embassies to European countries. He returned home in 1597, and spent the rest of his life in augmenting the public library at Oxford. He was knighted at the accession of James I. He bequeathed almost all his possessions to the library. See BODLEIAN LIBRARY.

Bodmer, Johann Jakob (1698-1783), Swiss poet and man of letters. He was prof. of hist. at Zürich from 1725 to 1775, and a member of the Grand Council there. He founded a weekly critical periodical, which aimed at freeing literature from the shackles of pedantry. He did much by his contributions as a journalist and critic to create a Ger. national literature free from foreign influences. B.'s works include *Noachide*, 1752, an indifferent poem in 12 cantos; *Ancient Literature*, 1746; a prose translation of *Paradise Lost*, and other translations, etc.

Bodmin, co. tn. of Cornwall, 30 m. W.N.W. of Plymouth, England. It has some trade in agric. produce, and has numerous relics, including Rom. remains. Pop. 5500.

Bodo (Bodö), coastal tn. of Norway. It is situated almost opposite the S. extremity of the Lofoten Isles. Pop. 4700.

Bodonì, Giambattista (1740-1813), It., printer, the son of a printer of Saluzzo, in Piedmont. In 1758 he went to Rome and was employed as compositor in the printing office of the Propaganda. In 1788 he was made head of the ducal printing house in Parma, whence he sent out some beautiful eds. of Gr., Lat., Fr., and It. classics. The works from his press are among the best examples known of It. typography, and are eagerly sought after by collectors.

Bod-pa, see TIBET.

Böttcher, Ludvig Adolph (1793-1874), Dan. poet, b. at Copenhagen, and educated there. He was for some time secretary to Thorwaldsen. His poems are chiefly love-songs, but all are remarkable for delicacy and finish. His philosophy was that of the epicurean and quietist. See Gosse's *Northern Studies*, 1879.

Body Cavity, term used in embryology to denote that portion of the embryo which ultimately develops into the pleural, pericardial, and peritoneal cavities, that is to say, those portions bounded by the membranes enclosing the lungs, heart, and abdomen. The ovum after fertilisation divides up into a number of cells. A cavity called the segmentation cavity then appears; an outer layer of cells, the *ectoderm*, and an inner layer, the *endoderm*, are differentiated. Then there is estab. a linear streak called the *primitive streak*, consisting of thickened ectoderm. The *mesoderm* or middle layer then develops between ectoderm and endoderm. The mesoderm gradually extends over the whole of the ovum, separating the endoderm from the ectoderm, but in most mammals a cleavage appears in the mesoderm, which ultimately develops into the *coelom*, or body cavity. In other forms the *coelom* represents the segmentation cavity. The embryonic area then develops folds at head and tail, and attains a crescent formation, the endoderm being represented by the yolk-sac and primitive alimentary canal held between the horns of the crescent, and the body cavity forming the body of the crescent.

Body's Island, sandbank off N. Caro-

lina, U.S.A., extending for some distance along the coast. It has a lighthouse 150 ft. high, the highest in the States.

Body Snatching, Body Snatchers. See RESURRECTIONISTS, or RESURRECTION MEN.

Boece, Boeis, Boyce, or Boethius, Hector (c. 1465-c. 1536), Scottish historian, b. at Dundee. He was descended from an anct. family who had held the barony of Panbride, near Carnoustie, since the reign of David II. He received his education at Dundee and at Paris Univ. Vacating the chair of philosophy in the college of Montaigu, he was in 1500 appointed by Bishop Elphinstone to the first principalship and professorship of divinity of King's College, Aberdeen. B.'s first work, which included an account of Bishop Elphinstone, was entitled *Episcoporum Muthlucensium et Aberdonensium* (pub. 1522). In 1527 he received from the king a pension of 250 Scots yearly. Later, when he was appointed rector of Tyrie, that pension was altered to a yearly 100 marks Scots. This he enjoyed until his death, when he was buried beside Elphinstone. He had been made doctor of divinity (Aberdeen) in 1528. He is remembered for his famous hist. of Scotland, *Scotorum Historia ab illius gentis origine*, first pub. in 17 books in Paris in 1527, and by order of James V. trans. into the Scottish language by John Bellenden. The hist. begins with a geographical description of the country, and contains much fabulous and legendary material, including the story of Macbeth, later borrowed by Holinshed, in whose *Chronicle* Shakespeare read it.

Boeckh, Philipp August (1785-1867), Ger. philologist and antiquary, b. at Karlsrube; studied at the univ. of Halle, where as a student under Wolf he developed his philological bent. In 1807 he became prof. of philology at Heidelberg, and in 1811 he was transferred to the univ. of Berlin. According to B. philology should be approached not only from the literary but also from the social and historical side. His ed. of Pindar, 1811-22, is remarkable for its critical genius. His other works include: *Die Staatshaushaltung der Athener*, 1817; *Metrolologische Untersuchungen über Gewichte, Münzfusse, und Masse des Alterthums*, 1838. He also commenced the great *Corpus Inscriptionum Græcarum*.

Boecklin, Arnold, see BÖCKLIN.

Boehm, Sir Joseph Edgar (1834-90), Eng. sculptor, b. at Vienna, of Hungarian parentage. He early settled in England for the study of his art as a moulder of coins and medals, and his work was attended with such success that he was persuaded to devote his whole attention to sculpture. In 1869 he executed the colossal statue of Queen Victoria for Windsor Castle, and after that time a succession of noble patrons charged him with commissions. In 1878 he was made A.R.A., and in 1881 was nominated sculptor in ordinary to the queen. In 1882 he became R.A. The effigy of the queen on the Jubilee coinage of 1887 was designed by him.

Boehme, Jakob (1575-1624), Ger. mystical writer, b. near Görlitz in Upper Lusatia. He received practically no education. At about the age of 14 he was apprenticed to a shoemaker, and he remained in this trade for some considerable time. He was never possessed of much wealth, and the greater part of his life was spent in one long struggle with poverty. His first written work was the *Aurora*, a work of revelation and meditation; of the nature of God and man. The book was eagerly read, and created a considerable sensation, so much so that he was forced to appear before the local council, who confiscated his book and told him to write no more. For the next 6 years he was silent, but at the end of that time he again began to write on such subjects as repentance and resignation. In 1624 he was summoned to Dresden, where he was well received. He still, however, had to face clerical opposition. He and his chief opponent, Richter, d. within a few months of one another. His main aim in the writing of his great work *Aurora* was to attempt to explain the origin of things. His philosophy can be largely called the philosophy of contradiction. The *Unground*, or *Urground*, was the source of everything—love and sorrow, heaven and hell, sweet and bitter, and his conception of God made the Deity the beginning and source of everything rather than the goal to which the ideals of the theologian was to attain. His name is often quoted in England as Behmen, and during the seventeenth century his works were very extensively studied. See R. H. Betterling, *The Illuminate of Goerlitz or J. Böhme's Life and Philosophy*, 1923.

Boehmeria (*Böhmeria nivea*), species of Urticaceae which is a native of China and Japan. It is valuable in commerce for its long and strong bast fibres which are woven into the durable material known as grass-cloth, rhea, or ramie.

Boëllmann, Léon (1862-97), Fr. organist and composer, b. in Alsace. Trained as an organist under Gigout, a teacher of church music in Paris. Appointed organist of the church of St. Vincent de Paul. His *Gothic Suite* is well known, as also his *Symphonic Variations* for cello and orchestra.

Boeotia, anct. political div. of Greece; enclosed by mts., it had an area of about 1120 sq. m., extending between Locris and Phocis on the N., and Attica and Megara on the S. The earliest inhab. were the Minyæ, who were driven out by the Boeotians, who were of Æolian race and came from Thessaly. The prin. pursuits of the Boeotians were agric. As compared with other Gks. they were rough and boorish. This fact led to the term Boeotian being used as a synonym for ignorant, unlettered stupidity. The dist. was divided into 5 main divs.: the basin of Lake Copais, that of Asopus, the plain of Thebes, the coast dist. of the Eubœan Gulf, and that of the Corinthian Gulf. The prin. riv. was in anct. times known as the Cephissus (q.v.). Formerly the Boeotian League numbered 14 great cities with Thebes at its head.

Boerhaave, Hermann (1688-1738), Dutch physician, b. at Voorhout near Leyden. In 1682 he took his philosophical degree at Leyden, and in 1693 his medical degree. He was appointed lecturer on the theory of medicine at Leyden in 1701, prof. of medicine and botany in 1709, and prof. of chem. in 1718. He had a great reputation in his time, and made a fortune of 2,000,000 florins by his profession. His works include *Institutiones Medicæ*, 1708; and *Aphorismi de Cognoscendis et Curandis Morbis*, 1709.

Boers (from Dutch *boer*, farmer, husbandmen; cf. Eng. boor), name given to the Dutch settlers in S. Africa. They began their settlements in the seventeenth century, and they have been augmented by Fr. Huguenots. They particularly occupy the Transvaal and Orange Free State.

Boer Wars: 1. The war between the Brit. and the Boers of the Transvaal, S. Africa, in 1880-81, occasioned by the proclamation of the Transvaal as a republic. The most notable event of the war was the defeat of the Brit. at Majuba Hill in 1881. Peace was made shortly afterwards, Great Britain recognising the independence of the Transvaal. 2. The war between Great Britain on the one side and the Transvaal Republic and the Orange Free State on the other, in 1899-1902. The Brit. at first suffered reverses, and Brit. troops were hemmed in at Ladysmith, Kimberley, and Mafeking. All 3 were ultimately relieved, the length of the sieges being: Ladysmith, Oct. 29, 1899, to Feb. 28, 1900; Kimberley, Oct. 14, 1899, to Feb. 15, 1900; Mafeking, Oct. 15, 1899, to May 16, 1900. Pretoria, the cap. of the Transvaal, was occupied by the Brit. troops under Lord Roberts on June 5, 1900. Peace was signed on May 31, 1902. The conquered countries were given self-gov., and in 1909 they were included in the Union of S. Africa by the S. African Union Act of that year. For details see SOUTH AFRICA, THE UNION OF.

Boethius, Anicius Manlius Torquatus Severinus (c. 470-c. 524), Rom. philosopher and statesman, b. in Rome, of a distinguished family, he received a liberal education and soon became noted for his learning, especially in Gk. He is described by Gibbon as 'the last of the Romans, whom Cato or Tully could have acknowledged for their countryman.' In 510 he became consul, and later chief of the senate. In 500 the seat of gov. of Theodoric, king of the Goths, had been fixed at Rome, and B., who had gained his confidence, was appointed *magister officiorum* in his court. He lost the favour of Theodoric, however, by his firm stand for the rights of the Romans against the tyrannical rule of Gothic officials, and in particular by his defence of Albinus and Symmachus, who had made an attempt to assert Rom. independence. B. was accused of treason, degraded from his dignities, despoiled of his property, and after a long imprisonment at Pavia executed by the king's command. While in captivity he produced his great work *De Consolatione Philosophiæ*, which takes the

form of a dialogue between the writer and philosophy, the latter teaching the mutability of all things save virtue. This famous work is an imitation of a similar work by Marcellus Capella, *De Nuptiis Philologiae et Mercurii*. Its style is based on the best Augustan models, and the prose conversation is interspersed with verse passages. While the religious tone of this work is decidedly theistic, it contains no reference to Christianity, which fact, together with the doubtful authenticity of the *De Fide Catholica* attributed to him, rather militates against the medieval canonisation of him as a Christian saint. This book was very popular in the Middle Ages, and was trans. into A.-S. by Alfred the Great, and into Eng. by Chaucer. B. trans. into Lat. Aristotle's *Categories* and *Perihermenias* (περὶ ἑρμηνείας) and it was long supposed that he also trans. the *Analytica Priora et Posteriora*, *Topica*, and *Elenchi Sophistici*, but these latter works, like so much that was once attributed to B., are now regarded as spurious. He wrote a series of independent works on logic, manuals of arithmetic, astronomy, geometry, and music, which were largely used. His complete works have been sev. times pub., the last ed. being at Paris in 1860.

Boethius, Hector. see BOECE, HECTOR.

Boeton. see BUTON.

Bog, land which has become soft and spongy, from the presence of too much water. Generally it is partially composed of decomposing vegetable matter, and in this formation it is common in N. countries, and particularly in Ireland. Here the Bs. are sufficiently firm to bear considerable weight, and the heat of decomposition forms the vegetable matter into peat, which is cut out and used both for fuel and in the composition of manures. It is estimated that over 2,000,000 ac. of the surface of Ireland are thus occupied. The greatest B. in the Brit. Isles is the B. of Allen, lying to the E. of the Shannon, chiefly in co. Kildare, Eire. The name is given to a collection of Bs., separate, but grouped together as the B. of Allen. Bs., which may be from 20 to 40 ft. in thickness, often prove a serious menace to the prosperity of the surrounding land, for in the event of a 'B. burst' the neighbourhood may be swamped with water and covered with a deposit of peat. The surface of the Irish Bs. is covered with fine green turf, and the roots are so matted together that a man may walk over them in safety provided he is accustomed to doing so. The surface is not generally level, but is usually uneven, sometimes swelling up into mounds. This gives facility for drainage, of which advantage is now being taken. In England, Chat Moss, in Lancashire, is a B. which has been largely filled up, and Solway Moss should also be named.

Bog, River. see BUG.

Bogardus, James (1800-74), Amer. inventor, b. at New York. He was brought up to the business of a watchmaker. He invented the dry gas-meter, a pyrometer, a sounding machine for use in deep sea,

a dynamometer, etc. In 1839 the Brit. Gov. accepted his method for the manuf. of postage stamps.

Bog Asphodel (*Narthecium ossifragum*), species of Lillaceæ, common in boggy ground throughout Britain. It has yellow flowers, a sympodial rhizome, and localised capsule.

Bogatzky, Karl Heinrich von (1690-1774), Ger. divine, studied theology at Jena and Halle (1715-18). His *Goldenes Schatzkästlein der Kinder Gottes*, 1798, has been reissued over 60 times.

Bog Butter, fatty substance which has been discovered in peat-bogs of Ireland and Scotland, and is known technically as butyrellite. It is a form of adipocere.

Bogdanov, Alexander Alexandrovitch, pseudonym of Malinovski (1873-1928), Russian economist. After suffering exile on account of his advanced views, he took part in the first Russian revolution of 1905, and returned from abroad to Russia after the second revolution. His *Short Course of Economic Science* is regarded as a good text-book of Marxian economics.

Bogdanovitch, Ippolit Fedorovitch (1743-1803), Russian poet, b. at Perevolotchna, Little Russia. In 1788 he became president of the imperial archives. His fame as a poet rests mainly upon his *Dushenka*, 1778, a mock-heroic poem based on the story of Psyche.

Bogdanovitch, Prince. see BARCLAY DE TOLLY.

Bögh, Erik (1822-99), Dan. poet and dramatist, b. at Copenhagen. He was a prolific writer, having written more than 100 plays, and is well known in his own country for his songs, vaudevilles, and *jeux d'esprit*.

Boghaz Keui, vil. of Asia Minor, in the prov. of Anatolia and vilayet of Ankara, Turkey. The heights which overlook the vil. are crowned by the ruins of an ant. Persian city, generally identified with Pteria, which Croesus destroyed after crossing the Halys (see Herodotus, i. 76). Parts of the rocks are covered with sculptures, whose prin. scene shows the Persian king in a triumphal entry. It is composed of 60 figures, some of which are colossal. The rocks have been levelled by hand, though they naturally form a ring round the ruins. From cuneiform tablets discovered in the first decade of the present century it would appear that when the Hittite empire incorporated all or most of Central Asia Minor, Cappadocia, and Syria, B. K. was the seat of authority.

Boghead Coal, or **Torbanite**, bituminous substance found near Bathgate in Scotland. It is dark brown in colour, and somewhat of the nature of cannel coal. It contains a large amount of volatile substance, consequently is largely used in making paraffin and gas.

Bogie, the name given to the frame-work supporting the front portion of a locomotive engine or railway carriage. The B. is pivoted to the frame of the engine, and has usually 2 pairs of wheels. By reason of the freedom of action given by the pivot, the strain and jolting caused

when taking curves is greatly lessened, and the danger of the train leaving the rails reduced.

Bog Iron Ore, mineral formed from deposits of limonite often found in bogs, lakes, and meadows. In composition it may be compact or spongy, and in colour it is either blackish-brown or yellowish-brown. The iron which it yields is of good quality, but there is usually little of it, and it is often mixed with sand and clay. It is found abundantly in the lakes of Norway and Sweden, in N. America, and in some parts of Scotland.

Bog Moss, or **Peat Moss**, various species of *Sphagnum* found in damp soil in N. lands. They are spongy and readily absorb and retain water, both from the soil and from the atmosphere. The leaves are of a whitish colour, and the decaying roots aid in the formation of peat. See Dr. R. Braithwaite's *Sphagnacæ or Peat Mosses of Europe and North America*, 1880.

Bog Myrtle, or **Sweet Gale** (*Myrica gale*), plant which grows abundantly in bogs of Britain, especially in the highlands of Scotland. The leaves emit a fragrant odour when crushed. It bears male and female catkins, and the fruit is a wax-secreting nut.

Bognor Regis, a watering-place in Sussex, in the parl. div. of Chichester. The tn. is well equipped with the seaside requirements, and possesses a sixteenth-century church at Bersted. By its affix of Regis it commemorates the tribute paid to it by King George V.'s physicians in selecting it for their patient's convalescence in 1929. Pop. of urban dist. 14,000.

Bogo, or **Bago**, tn. on the N.E. coast of the is. of Cebu, in the Philippine Is. There is a good harbour, and the surrounding country is fertile. Pop. 15,000.

Bog Oak, hard, black wood found in bogs, indicating that forests once flourished in the present marshy ground. In Ireland it is used for the manuf. of ornaments. The action of the antiseptic water preserves the oak well, but at the same time renders it difficult of manipulation in carving.

Bogodukhov, tn. of the Ukraine, 45 m. N.W. of Kharkov; centre of agric. industry. Pop. 12,000.

Bogomila (Slavonic, beloved of God), religious sect which arose in the Gk. Church in Thrace, Bulgaria, and Macedonia, and was first mentioned at Philippopolis in 1115. Their leader was a monk named Basil, from whom Alexius Comnenus obtained a full knowledge of their doctrine and then condemned his informant to be burned in 1118. The sect still survived, however, until the Mohammedan conquest of the Balkan states in the sixteenth century. The B. held that God created Satanall and Christ, the former of whom rebelled and created earth and human kind, though God himself gave life to these new beings. Christ received from his mother Mary the semblance of man, and conquered Satanall, who became known as Satan. This sect

upheld celibacy, forbade the eating of meat, and rejected images; baptism among them was purely spiritual, and the real presence in the eucharist was denied. See Razki's *Bogomili i Paterani*, 1869; J. Heard's *Russian Church and Russian Dissent*, 1887.

Bogong, mt. peak in Victoria, Australia. It has an altitude of 6508 ft. above sea-level.

Bogoroditsk, tn. of R.S.F.S.R., in the Tula region, 40 m. S.E. of Tula; centre of trade in honey and flax. Pop. 6500.

Bogorodsk, tn. of R.S.F.S.R., in the Moscow region, 40 m. E. of Moscow; centre of the textile industry. Pop. 38,000.

Bogos, a pastoral tribe of N. Abyssinia. Their country (which was subsequently merged in Eritrea) is largely cultivated, but in parts has almost impassable undergrowth, affording cover for wild animals. The language spoken is similar to that of the Ago tribe, and is called by the natives Bilen. Christianity and Mohammedanism are the prevailing religions, and their laws are peculiar and stringent. The pop. is variously estimated, but exceeds 10,000.

Bogoslovsk, tn. of R.S.F.S.R., in the Sverdlovsk region, 185 m. N.E. of Perm; centre of copper and iron industry. Pop. 5000.

Bogotá, originally **Santa Fé de Bogotá**, city, cap. of the prov. of Cundinamarca and the republic of Colombia, situated on a fertile plateau 8700 ft. above sea-level, some 200 m. from the coast. Remote and famous, B. is a picturesque tn., and its Sp.-colonial character is stamped on its streets and plazas. Like many other Lat. Amer. cities, it is a city lifted above the environment of a tropical or subtropical latitude by its altitude. Its topographical situation is most pleasing, for its surroundings are watered by many lakes and streams, one of which passes through the city and plunges over the edge of the plateau at Tequendama in a cascade over 500 ft. high; while from the sloping plain on which it stands rise 2 lofty mts., La Guadalupe and Monserrate, both crowned with imposing churches; and the streets which all slope downwards; and streams of cool fresh water from the mts. run down the sloping streets, wide *acequias* flushing the gutters. It was founded by Gonzalo Ximenes de Quesada, a native of Santa Fé near Granada, in 1538, and became a bishopric in 1561, cap. of the viceroyalty of New Granada in 1598. After the declaration of independence it was taken by the Spaniards in 1816, recaptured by Bolívar in 1819, and became the seat of gov. of Colombia in 1831. The city is traversed by the rvs. San Francisco and San Augustin, and has regular well-paved streets crossing at right angles. The chief street, the Calle de la República, leads to the square, the Plaza de la Constitución, in which are the palace of the president, the custom-house with other gov. buildings, and the beautiful cathedral; in the centre of the plaza is a statue of Bolívar. The Capitolio, the building occupied by the Legislature, is a spacious handsome structure. Among

its features of historic interest is the marble tablet on its façade inscribed with gold letters, in memory of the Brit. Legion, the Eng. and Irish, who aided Bolívar and Colombia to throw off the Sp. yoke. There are, however, very few other imposing public buildings. As B. is subject to earthquakes the houses are made of strong material; the tn. is noted for its numerous churches. It contains also a univ., the Colegio Nacional de San Bartolomé, a museum, public library, observatory, and military academy. Within the dist. are valuable mines and good pasture land. The manufs. are of very little importance, but it is the emporium for trade with the interior. Pop. 482,400.

Bog-pimpernel, see under L'IMPERNEL.

Bog Plants, various plants which grow in bogs. The soil in which they grow often contains rich food materials, but is not sufficiently aerated, so that the plants cannot form nitrates; sev. of these plants, therefore, e.g. the sundew and butterwort, are carnivorous, and obtain their nitrogen from insects which they devour. Again, the water is deficient in lime and other salts, and the plants are stunted, unlike their neighbours in the marshes. Water-absorption is rendered difficult by the peaty acids of the bog, and many plants have therefore the characteristics of xerophytes. Agriculture will not tolerate the soil necessary for them, and the consequent drainage of the land usually kills the plants. Many of them are extremely beautiful, and for this reason they are grown under artificial conditions planted in gardens, in a soil composed of peaty substances and bog-mould; they receive a plentiful daily supply of water. Under their various headings the chief B. Ps. are discussed. From the great variety of these plants the following may be chosen as examples: bladderwort, butterwort, bilberry, bog asphodel, bog bean, bog cinquefoil, bog orchid, bog myrtle, bog pimpernel, heather, ling, grass of Parnassus, meadowsweet, marsh-marigold, lousewort, rushes of different kinds with sedges and grasses, sundew, and yellow rattle.

Bogra, dist. of E. Bengal, Pakistan, in the valley of the R. Brahmaputra, and placed partly within its delta. Its area is nearly 1400 sq. m., and its cap. B. Pop. 1,100,000.

Bog Spavin, see HORSE.—*Diseases*.

Bogue, David (1750–1825), Scottish divine, b. near Eyemouth, Berwickshire; educated at Edinburgh Univ. His best pub. works are his *Essay on the Divine Authority of the New Testament* (1801) and, with Dr. James Bennett, a *History of Dissenters* (1809).

Boguslav, tn. of Ukraine, 70 m. S.S.E. of Kiev, which trades in cloth and wool. Pop. 12,000.

Bohain, tn. in the dept. of Aisne, France. It is 12 m. by rail from St. Quentin which lies to the S.W. Its pop. is 6480. The Anglo-Amer. forces defeated the Gers. here, Oct. 17, 1918.

Bohea, a kind of black China tea, so called from Wu-i, the name of the hilly

dist. where it is grown. In the eighteenth century it was in general use, but to-day is used for a poorer leaf.

Bohemia, prov. of Czechoslovakia. It is bounded on the N.W. by Silesia, on the S. by Upper Austria, and on the S.E. and S.W. respectively by Moravia and Bavaria. It has a length of 210 m., reckoned from E. to W., and a breadth from N. to S. of 170 m. The area of B. is approximately 20,000 sq. m., and its pop. numbers about 7,000,000. The prov. consists of a series of high-lying valleys surrounded by mts. The only rivs. of importance are the Elbe (Czech, Labe) and its trib. the Vltava (Moldau), which drain the whole country. High mt. ranges surround the country; it is separated from Silesia on the N.E. by the Riesengebirge, Adlergebirge, and other ranges belonging to the Sudetic system; the Erzgebirge divide it from Saxony on the N. and N.W.; the Böhmerwald, or Bohemian Forest, on the W. and S.W., the Moravian plateau on the S.E., joining the Böhmerwald at the S.W. extremity, and the Adlergebirge at its N.E., complete the chain of enclosing mts. The Elbe leaves B. through a defile separating the Erzgebirge and the Riesengebirge, and the Vltava flows through the depression which separates the Böhmerwald from the Erzgebirge. A series of terraces and plateaux slope down from the Böhmerwald in the direction of the Elbe; they are watered by the Vltava and its tribs. The riv. valleys are the only level dists., at Prague (Praha), Pilsen (Píseň), and Budějovice, and they are not of great extent. The Vltava and Elbe are the main sources of the development of hydraulic power in the country. Along the course of the middle Elbe and in certain other dists., electric power produced by water has replaced other power not only in factories, but on many farms. The climate of B. is similar to that of Germany; the low-lying riv. valleys naturally enjoy a more temperate climate than the mountainous dists. There are no very extensive lakes, but many ponds. The country is noted for its mineral springs, of which the best known are the saline chalybeate springs of Franzensbad, Marienbad, and Glesschubel, the warm alkaline springs of Karlsbad (Karlovy Vary), and Teplitz, the bitter cathartic springs of Sedlitz, Sardschitz, and Püllna, and the sulphurous springs also found at Teplice. B. is largely composed of Azole and Palaeozoic rocks of great antiquity; there are also marine deposits of the Triassic and the Cretaceous age, whilst outflows of volcanic material are found. About a third of the surface is covered by forests, the remainder being tilled or used as pasture. The soil is fertile, cereals being grown in the lower dists. of the N., and potatoes and oats in the higher-lying dists. There are over 5000 flour mills with an output approaching 100,000 quintals, and many establishments for drying chicory. The production of potato starch, dextrin syrup and glucose is concentrated mostly in the hilly borderland on the frontier of B. Sugar is manufactured

from the beetroot which is grown. B. is rich in minerals. The minerals found include silver, iron, lead, copper, tin, antimony, uranium, and a small quantity of gold; in addition to these the most important are coal and lignite. The coal mines, which lie principally around Kladno and Pilsen, have a yearly yield of many million tons, whilst the lignite mines, extending from Aussig to Eger along the Erzgebirge, produce also many million tons of lignite. Iron ore is mined in the neighbourhood of Prague, Pilsen, and Falkenau and smelted at the 2

The manuf. of agric. machinery is conducted in about 150 factories located in the central dists. The trade of B. is a very active one, as the Elbe is important as a means of communication and transit. While the Bohemian industries are modern, agriculture is backward. The Prague univ. is one of the oldest in the world, being founded in 1348. It has over 18,000 students, while the Technical Univ. has 15,000. The other univs. are at Brno, with 6600 students (Technical Univ., 3200). There are 2 commercial academies at Prague, a mining academy



CARLSBAD (KARLOVY VARY)

Czech Embassy

other places; since 1878 the Gilchrist treatment has done much to improve the iron industry of the country. Sugar manufacturing is the industry of most importance that is carried on. The other manufs. include cotton goods from Reichenberg to Brux, and at Prague; cloth and woollen goods at Reichenberg, Aussig, Friedland, and Asch; linens at Schönberg, Trutnov, and Hohenelbe; carpets at Reichenberg and Eger; beer at Pilsen and Eger. In 1841 there were 1052 breweries in B., but by 1916 only 475 of them remained. The Bohemian breweries are noted for their modern equipment and the excellent quality of their brew. The barley grown in the centre of the prov. is of a high quality. Since the glass trade was introduced from Venice in the thirteenth century it has been a very considerable industry in B., the chief centres being Prague, Eger, Gablonz, and Carlsbad. Distilling and printing are also carried on to some extent. There are about a score of industrial distilleries in B.

at Píbram, a forestry academy at Weisswasser, and agric. colleges at Tabor and Böhmisches-Leipa, besides various other institutions of a technical character. The secondary schools are on the same lines as the Ger., whilst elementary education is compulsory from 7 to 14 years of age. About three-fifths of the pop. are Czechs, a Slavic race which has its own language and literature. (See under CZECHOSLOVAKIA.)

History.—The name B. is derived from the Boii, a Celtic tribe which was in possession of the country at the earliest date of which we have any historical knowledge. The Marcomanni entered the country and vanquished the Boii shortly before the beginning of the Christian era; they held dominion until about the fifth century, when the Czechs entered the country, which they have since occupied. Christianity was introduced into the country in the ninth century. Wenceslaus (Wenzel) I. was king from 1230 to 1253, and his son Přemysl Ottokar

II. waged war against the Prussians and Hungarians. Rudolph of Hapsburg, elected Ger. emperor in 1273, checked his conquering career near Marchfeld in 1278, when Ottokar was killed. Wenceslaus II. succeeded him, being only 7 years of age when his father's death took place; during his reign, which lasted till 1305, the kingdom enjoyed great prosperity. His son Wenceslaus III. was assassinated at Olmütz after a reign of only 1 year; with him the male line of the Přemysl dynasty terminated. Rudolph of Hapsburg and Henry of Carinthia reigned for a very short time. After these kings the Bohemians in 1310 chose John of Luxembourg for their ruler, the only son of the Ger. emperor Henry VII. Whilst engaged in a crusade against the Lithuanians in 1336 he suffered the loss of one of his eyes, and complete loss of sight supervened in a short space of time. Notwithstanding his blindness he went to the aid of his brother-in-law, the king of France, against the Eng., and was killed in 1346 at the battle of Crécy. His son Charles IV. founded in 1348 the oldest European univ., that of Prague. His Golden Bull, issued at the Diet of Metz of 1356, is remarkable for the fact that it recommends the Ger. princes to make a study of the Bohemian tongue. The daughter of Charles IV., Anne, was married to King Richard II. of England. On Charles's death in 1378 his son Wenceslaus IV. succeeded him. The doctrines of Wycliffe penetrated to B. about this time, and were enthusiastically proclaimed by John Huss. Intermingled with these doctrines were the national aspirations of the Czechs, and as a result B. was the arena of internecine wars. Huss was burnt in 1415 at the council of Constance, but John Ziska became the leader of the Hussite party, and owing to his remarkable military genius the war was prolonged. Ziska, though blind, was a born leader of men and a talented general, being especially skilled in fortification. The moderate party of the Hussites, after Ziska's death, made terms with the Catholics, and Sigismund, who had succeeded Wenceslaus IV. in 1419, was acknowledged king in 1433. Sigismund d. in 1437 and was succeeded by Albert, duke of Austria, who d. in 1439 after a reign of only 2 years. During the minority of his posthumous son by Elizabeth, daughter of Sigismund, George Poděbrad was regent. On the death in 1457 of Ladislaus Posthumus, as this son was called, Poděbrad was unanimously elected king in 1458 by the Bohemian estates. Poděbrad was continually engaged in struggles against Matthias Corvinus, the king of Hungary; on the former's death in 1471 he was succeeded by Wladislas, son of Casimir, king of Poland. Wladislas also obtained the crown of Hungary, and in his reign the opposing religious parties were united by the peace of Kulenberg in 1485. He was a weak and inefficient ruler, and d. in 1516. He negotiated 2 important marriages, however, that of the Archduchess Mary, grand-daughter of the Emperor Maximilian, to his son Louis, and that of his

daughter Anne to the Archduke Ferdinand, grandson of the emperor. The chief event of the reign of Louis is the invasion of Hungary by the Sultan Solymán, and the defeat of the Hungarians at the battle of Mohács, which took place on Aug. 29, 1526, and in which Louis was killed. The Archduke Ferdinand was elected king after some controversy, and from this date B. really lost its nationality as Ferdinand procured in 1547 that he should be nominated hereditary instead of elective ruler. Ferdinand crushed all attempts at recovering any of the liberty which he had taken away, and furthermore introduced the Jesuits into the country in 1556, a step which had reactionary results. The Emperor Maximilian II. succeeded him in 1564, and was succeeded after a reign of 2 years by his son Rudolph II. In 1609 the Bohemians compelled Rudolph to grant the noted Letter of Majesty which conferred the privilege of religious toleration on the country. Rudolph was compelled to abdicate in 1612 in favour of his younger brother Matthias; later, however, Rudolph succeeded in causing his cousin Ferdinand, afterwards emperor, to be elected as king of B. The Bohemian tongue was declared to be the official language of the country in 1615. Ferdinand, although openly tolerant of Protestantism, was a bigoted Rom. Catholic, and had sworn to root out heresy in his dominions. The defenestration (Lat. *fenestra*, a window) took place in May 23, 1618. Slavata and Martinitz, two of Ferdinand's myrmidons, were flung out of the windows of the Hradscbin by the Protestants. This event precipitated the Thirty Years war (1618-48), the events of which belong to the hist. of Austria and Germany. By the end of the Thirty Years war the political and religious liberties of B. were swept away, and the national language fell into desuetude. The edict of toleration issued in the reign of Joseph II. restored the freedom of the different religions. In the memorable year 1848, when Europe was everywhere disturbed by revolutionary movements, an attempt was made to assert the anct. independence of B. against the Austrian dominion. Prague was bombarded, and the revolutionaries were finally forced to lay down their arms. In 1897 Count E. Von Taaffe succeeded in persuading the representatives of B. to take part in the deliberations of the parliament of the empire at Vienna. The Bohemians consented on the condition that such a proceeding did not affect their opinion that B., Moravia, and Silesia should by rights constitute a separate state, under the same sovereignty as Austria and Hungary. Count Baden afterwards attempted to pass a bill making it necessary for every gov. official accepting employment in B. to have some knowledge of the Bohemian language. This attempt was, however, unsuccessful and was, in fact, responsible for the overthrow of the gov. then in power. The agitation for local self-gov. was, however, continued right up to the outbreak of the war in 1914,

when it was transformed into the claim for complete independence, which bore fruit in the formation of the Czechoslovak state. See also CZECHOSLOVAKIA; AUSTRIA-HUNGARY. See W. S. Monroe, *Bohemia and the Czechs*, 1910; Count F. Lutzow, *The Hussite Wars*, 1914, and *Bohemia*, 1920; E. Beneš, *Bohemia's Case for Independence*, 1917; V. Nosek, *Independent Bohemia*, 1918, and *The Spirit of Bohemia*, 1926; C. E. Maurice, *Bohemia from the Earliest Times to the Founding of the Czechoslovakia Republic in 1918*, 1922.

Bohemia, Forest of, or **Böhmerwald**, mt. range between Bohemia and Bavaria, stretching from the mouth of the Elbe to the Danube, about 120 m. in length. It is largely covered with dense forest, and towards Bavaria it is rugged and broken; the S. portion is known as the Bavarian Forest. The highest points are the Arber, 4780 ft., the Rachelberg, 4765 ft., and the Kibani, 4470 ft. It is traversed by 4 roads, and by 3 mt. railways.

Bohemian Brethren, see MORAVIANS.

Bohemund I. (c. 1058-1111), the eldest son of Robert Guiscard, distinguished himself in the war against the emperor of Byzantium in 1081. He was excluded from the throne of Apulia by his brother Roger, and took part in the crusade of 1092. After the capture of Antioch he estab. himself there as prince. He was, however, imprisoned by the Turks in 1100, but after 3 years' captivity returned to Europe and renewed the war against Alexius. He married a daughter of Philip of France.

Bohlen, Peter von (1796-1840), Ger. orientalist, b. in Oldenburg. He was educated at Halle and Bonn, where he devoted himself to the study of oriental languages, attending the lectures of A. W. von Schlegel on Sanskrit at Bonn in 1823. In 1825 he was appointed prof. of oriental languages at the univ. of Königsberg. His works include: *Ancient India*, 1830 (2 vols.), his most important work; *The Story of Genesis in the Light of Historical Criticism*, 1835; an ed. of Bhartrihari's *Senantia*; and Kalidasa's *Ritusambāra*; an *Autobiography* pub. in the year following his death; and translations of Sanskrit poems in the original metre. B. possessed an extensive knowledge of E. hist. and literature.

Böhme, or Bohm, Jakob. See BOEHME, JAKOB.

Böhmen, see BOHEMIA.

Böhmerwald, see BOHEMIA, FOREST OF.

Böhmisch-Brod, see ČESKÝ-BROD.

Böhmisch-Lepa, tn. of Czechoslovakia with extensive manufs. Pop. 11,700.

Böhmisch-Trübau, tn. of Czechoslovakia, with a pop. of 8700. It has important industries.

Bohn, Henry George (1796-1884), Eng. bookseller and publisher, b. in London, where his father, a Westphalian by birth, had a second-hand bookshop. Upon his father's refusal to admit him to partnership with him Bohn set up in business for himself, and in 1841 his 'guinea catalogue' of rare books attracted much attention. In 1846 he originated his Standard Library

of reprints, and followed with a series of other libraries, until in 1853 he had issued over 600 vols. in cheap form. Many of the translations and compilations were his own work. He ed. also Lowndes's *Bibliographer's Manual*, *The Origin and Progress of Printing*, 1857; and the *Biography and Bibliography of Shakespeare*, 1863.

Bohol, one of the Philippine Is. It is placed between Cebu and Leyte, and lies in lat. 10° N., long. 124° E. Its area 1614 sq. m., and its pop. approximately 360,000.

Bohr, Niels Henrik David (b. 1885), Dan. physicist, son of Christian B., prof. of physiology at Copenhagen. He was educated at Gammelholme school and at Copenhagen Univ. Lecturer in physics at Copenhagen 1913, and in Manchester, 1904-16, and prof. of physics at Copenhagen, 1916, and, subsequently, director of the Institute of Theoretical Physics at Copenhagen. In 1922 he was awarded the Nobel prize for physics or natural philosophy in respect of his research work in relation to the structure of the atoms and the waves emanating from them—researches allied to the experimental work of Ernest Rutherford (see RUTHERFORD, LORD), the discoverer of the nucleus of atoms. On Rutherford's basis, B. discovered the laws by which movements of electrons round the nucleus are determined and so solved the riddle of the spectrum. He thus paved the way for a more complete understanding of the chemical properties of matter, as well as an explanation of the so-called periodical system of elemental substances. It was as a lecturer in Manchester Univ. that he began his close collaboration with Rutherford, whose ingenious and at that time warmly contested theory of atoms B. developed by his own bold experiments and, in 1917, he pub. an epoch-making series of studies on the atomic theory. This work, together with Einstein's and Planck's researches (see also QUANTUM THEORY), opened a new chapter in the hist. of physics, for he laid down a group of new principles which departed radically from classical mechanics. In 1907 he received the Scientific Society's gold medal for his earlier work on the electron theory of metals. It was in 1923 that he discovered the new element hafnium and, in the following year, he received 40,000 dollars from the Rockefeller International Education Board out of which he was able to defray the cost of elaborate equipment for further research work. He has pub. numerous treatises on physics.

Böhtling, Otto von (1815-1904), Ger. scholar, studied Arabic, Persian, and Sanskrit at St. Petersburg (1833-35), Berlin and Bonn (1839-42). His studies in Indian and comparative philology are invaluable, and especially so is his *Sanskrit-Wörterbuch* (dictionary), which, with the help of 2 friends, took 23 years to complete.

Bohun, name of a family which played a conspicuous part in Eng. hist. during the thirteenth and fourteenth centuries.

Their founder was Humphrey, a companion of William the Conqueror, but Humphrey (III.), steward in the household of Henry I., was the first representative of note. Henry B. received the earldom of Hereford from John (1199). As their lands lay on the Welsh borders, the Bs. were notable Marcher barons. Humphrey (VII.) was among the nobles who obtained from Edward I. the Confirmation Cartarum (1297). Humphrey (VIII.), a lord ordainer, fought for Edward II. at Bannockburn (1314), was taken prisoner, and afterwards exchanged for Bruce's wife.

Boiano, see **BOJANO**.

Boiardo, **Matteo Maria**, Count of Scandiano (c. 1430-94). It. poet, b. at Scandiano in Modena, Italy; educated at the univ. of Ferrara. His intimacy with Duke Ercole led to his appointment as governor of Modena in 1481 and of Reggio in 1487. His best work is the *Orlando Innamorato*, which Ariosto imitated and continued in his *Orlando Furioso*. (Berni (q.v.) brought out a *riuscimento* or revised version of it in 1542.) He is known also for translations of Herodotus, Apuleius, and Lucian, and his *Sonetti e Canzoni*: the dramatisation of Lucian's *Timon* is especially to be noted. The best ed. of his works is by Panizzi, who issued them with his biography in 9 vols. in 1830. See G. Reichenbach, *Matteo Maria Boiardo* (Bologna), 1929.

Bois, **Heinrich Christian** (1744-1806). Ger. author and critic, b. at Meldorp in Schleswig-Holstein. In 1769 he became the leader of the Göttingen poets. His own work was by no means exceptional, and his importance is rather as editor, and founder in 1770 with F. W. Gotter, of the *Göttinger Musenalmanach*, and later, in 1776, as editor of *Das Deutsche Museum*, which was a monthly magazine with a high literary standard.

Boisdieu, **François Adrien** (1775-1834), Fr. composer, b. at Rouen. At an early age he manifested a talent for music, and at 18 composed a one-act opera which was produced at Rouen. He studied music in Paris, and became later a prof. at the Conservatoire de Musique. His friends included at this period such masters as Cherubini and Kreutzer. In 1803 he occupied the post of *maître de chapelle* to Emperor Alexander at St. Petersburg, but in 1810 returned to Paris to produce more operas. On his death he received a public funeral. His best works are *Le Calife de Bagdad*, 1799; *Ma tante Aurore*, 1803; the music for Racine's *Athalie*, *Jean de Paris*, 1812; *La Dame blanche*, 1825. See A. Pougin's *Boisdieu, sa vie, ses œuvres*, 1875.

Boii, a powerful Celtic people inhabiting originally part of Transalpine Gaul. They early crossed the Alps, settling in the dists. between the Po and the Apennines and also between the Danube and the Tyrol, while some took up their abode in modern Bohemia, a country which received its name from this invasion. They are frequently mentioned by Cæsar, Livy, and Polybius.

Boli, an affection of the skin, consisting of a hard swelling containing dead tissue. It is the result of infection by the micro-organism *Staphylococcus pyogenes*, and is usually caused by general debility, some individuals being more liable to such manifestations of ill health than others. It is necessary to expel the dead matter in the B. by clearing it out after a linear lancet incision. The cavity should then be packed with antiseptic gauze, and hot boric fomentations applied. Small Bs. are often successfully dealt with by employing lead plaster or glycerine and belladonna. Reynolds's treatment consists of administering large doses of well-diluted sulphuric acid every 4 hrs. In obstinate cases vaccine treatment may be resorted to, the vaccine being prepared from the patient's own staphylococci. Spreading of the infection to adjacent follicles should be guarded against in removing pus. Of chief importance is the question of building up the system by careful attention to food and hygiene, and a good tonic should form part of any treatment.

Boileau-Despréaux, **Nicolas** (1636-1711), Fr. critic and poet, the fifteenth child of Gilles B., a parl. clerk, b. in the rue de Jérusalem, Paris. He was educated at the Collège de Beauvais, and studied first theology and then law at the Sorbonne. He was called to the Bar in 1656, but was so disgusted at the insincerity and chicanery prevalent that he threw up his profession, and lived on the small fortune which his father, who d. in 1657, had left him. He devoted himself henceforth to literary pursuits, but his first works hardly showed any promise of future talent. His earliest work of any note was his first satire, which he pub. in 1660; 8 others followed this, and still later he wrote 4 more, bringing the number up to 12. In these works, which were modelled on Juvenal and Horace, he showed the capabilities of the Fr. language for expressive and at the same time regular verse. At the time of writing his satires he was living in an artistic coterie which included Racine, Chapelle, and Antoine Furetière, and it was no doubt in the intercourse which he had with them that he gained many ideas for his *Art poétique*, which appeared in 1674. In this work he taught the value of artistic workmanship for its own sake, and reduced versification to rule; Pope was greatly influenced by it, and Eng. literature through Pope. In the same vol. as the *Art poétique* were included the first 4 cantos of *Le Lutrin*, and the first 4 of his *Epistles*. *Le Lutrin*, which is one of his best-known works, is a serio-comic epic; his epistles are characterised by a graver tone, as well as a more polished style, than his satires. He was appointed historiographer to the king in 1677, and from that time his literary products are fewer in number; 5 new epistles and the fifth and sixth cantos of *Le Lutrin* were pub. in 1683, but they are not equal in quality to his earlier work. The *Dialogue des héros de roman*, which was pub. in 1713, and practically killed the vogue of romantic novels, had been written long previously. He was elected

a member of the Academy, by the king's wish, in 1684; he made many enemies by his satires, and his death was probably hastened by the activity of the Jesuits against him. A complete ed. of his works in 4 vols. was pub. in Paris, 1870-73. See study by P. Morillot (Paris), 1897; A. F. B. Clark, *Boileau and the French Classical Critics in England*, 1925.

Boiler is the term applied to a vessel in which steam is generated under pressure. The essentials of a B. are a closed vessel, holding the water and generated steam, fitted with means for supplying water and allowing the steam to be drawn off. In addition there must be a furnace for supplying the heat, and appliances for determining the level of the water in the B. and the pressure of the steam. Further, there must be some system of safety valves for the automatic escape of any excess of steam pressure generated; while a chimney must be added at some place for the escape of the waste products of combustion, and for the formation of a draught to supply air for the working of the processes of combustion.

Main Types of Bs.—Bs. may be classified under 2 heads, according to the arrangement of the heating and water chambers. If the heating gases be carried through tubes or flues surrounded by water, then the B. is of the *fire-tube* type; while if the steam and water be carried in tubes passing through the furnace gases, then the B. is of the *water-tube* type. In any type of B. there must be a flame chamber and a steam and water reservoir, placed adjacent to each other. Different arrangements of these give rise to the different types of Bs. The flame chamber always consists of a furnace, where the fuel is burnt, placed over an ashpan, which collects the incombustible portion of the fuel, and controls the admission of the air required to burn the fuel. Where solid fuel (coal, coke, wood, etc.) is used, it is burnt upon a grate placed between the furnace and the ashpan. Where pulverised coal, oil, gas, etc., is used, no grate is necessary. The gaseous products of combustion may or may not pass through a combustion chamber before traversing the main tubular heating surface of the B. The gases finally either pass direct to the smoke-box and chimney (or funnel), or else are led through auxiliary devices which extract any heat remaining in them, before being discharged (see sections headed *Superheaters*, *Economisers*, *Air Preheaters*).

Efficiency of Bs.—The efficiency of a B. is defined as the quantity of heat absorbed by the water per lb. of fuel, divided by the quantity of heat which would be produced by perfect combustion of a lb. of fuel. This definition holds good for a simple B.; but when superheaters, economisers, and other such apparatus are used, a 'heat balance sheet' must be drawn out to determine the combined efficiency of the B. and auxiliaries. The prin. heat losses in a B., which prevent the efficiency reaching the theoretical 100 per cent, are as follows: Incomplete combustion of the fuel; heat carried up the chimney by the

furnace gases; heat carried up the chimney by excess air; radiation from hot B. surfaces; radiation to the ashpan from the under side of the grate; etc.

Production of Heat in Bs.—Theoretically just over 11 lb. of air are needed to burn completely 1 lb. of average coal; but practically it has been found that about twice as much air is needed either with forced or natural draught. With pulverised fuel, however, it is found possible considerably to reduce the proportion of excess air. In hand-fired Bs., careful stoking is necessary to keep the proportion of excess air down. A concave fire is probably the best; the thinner the fire the greater the chance of perfect combustion. The ideal either with natural or artificial draught is a mean thickness of fire of from 4 to 6 in. Thus small charges frequently added are the best means of stoking. With natural draught the fire should never be thicker than 8 in., while with artificial draught it may vary from 10 to 15 in., according to the draught. Fires of this thickness lighten the stokers' work, but do not tend to a perfect combustion of the coal or an ideal efficiency of the B. Soot in the tubes acts as a poor conductor of heat, and lessens the B.'s efficiency, and this is an added reason for careful stoking. With any form of firing, hand, mechanical, or pulverised fuel, a certain amount of soot forms on the tubes, which must be cleaned off periodically, either by hand, or by steam jets.

Grates.—The grates on which the coal is burnt are usually made of steel or cast-iron bars, from $\frac{1}{2}$ in. to 1 in. wide on top, and from $\frac{1}{2}$ in. to $\frac{1}{4}$ in. apart. Care is taken with these bars to leave very little room between the sides of the furnace and the bars in order to prevent an inrush of air, with a consequent lowering of temp., and production of contraction stresses at these points. These bars rest upon 2 crossbars at each end, while at the door end there is a broad plate, to prevent combustion near the doors. At the back end of the grate is a bridge which keeps the coal in the furnace and turns the flame upwards to the flues. This bridge, being made of firebrick, remains at a white heat, and serves to ignite any fresh coal thrown on the fire, as well as to consume smoke passing over it. The bridge, or brick arch, is an important part of the furnace of all Bs.

Mechanical Stoking.—When Bs. reach a certain size, it is found physically impossible to fire them by hand, as the weight of fuel to be thrown on the grate per min. is beyond the capacity of a man. Some form of mechanical stoking therefore becomes necessary. Mechanical stokers have the additional advantage that highly skilled firemen need not be employed to operate them, and that the number of firemen is considerably reduced. A very successful type of mechanical stoker consists of a broad endless *chain*, which forms the grate, and moves forward very slowly. Coal is spread evenly over one end by means of a hopper, and as it passes into the furnace it is ignited by the heat from a brick arch above the

fire. Only ash and clinker remain by the time the fire has reached the far end of the chain grate, and this is tipped over into the ashpan as the chain bends to return underneath. Another type of mechanical stoker is the *Under-feed*, which consists of a large hopper placed over a trough, fitted with a screw which recedes to the back of the furnace. As the coal falls into the trough it is crushed, and is then carried by the screw to the far end of the furnace. On its way it is completely burned. In the *Niclausse* stoker, the coal is fed on to the back of the grate, and is moved forward by means of the firebars, which are given an intermittent to-and-fro motion, by means of a slowly rotating shaft with hard steel cams, which engage with hard steel trip pieces on the firebar bearers. A mechanical stoker used on large locomotives is the *Duplex*, in which coal is conveyed from the tender to the engine by means of a screw, and then is blown on to the fire by means of steam jets, controlled by the fireman. Mechanical stokers are used extensively on land Bs., particularly water-tube Bs., but marine Bs. are usually hand-fired. Where it is desired to abolish hand firing, oil fuel is generally adopted at sea.

Pulverised Fuel.—This is fuel so finely powdered that it floats away with the slightest current of air. The mixture of pulverised fuel and air behaves just like gas, and can be burnt under Bs. at large jets. Two main systems of pulverised fuel firing are in use; in the first, the coal is pulverised in 1 or 2 special mills in a pulverising house, and is stored in bins over each B. From these it is picked up by a current of air from a fan, and burnt under the Bs. as required. In the Herbert *Atritor* system, each B. is provided with a combined fan and pulverising mill called an atritor from which the pulverised fuel is blown directly into the B. furnace; the fuel is stored in solid form, and the fire is controlled by varying the output of the atritor. Both systems have the advantage of providing an easily controlled fire, in which any fuel, no matter how poor the quality, can be burnt. Pulverised peat has been used with success. The Atritor system has the advantage that explosions cannot occur, since there is no storage of fuel in powder form. The bin and feeder system gains in that 1 large fan and 1 large pulverising mill are bound to be more efficient than sev. small ones. (See also PULVERISED COAL.)

B. Draught.—Combustion of the coal in the furnaces depends upon the supply of air above and below the grate. An excess or insufficiency of air leads to a lowering of the efficiency of the B. When a chimney is provided, the weight of the hot column of air measured above the grate is much less than that of a similar column of cold air outside. This causes a tendency to displacement which gives rise to a natural draught. In many cases, however, it is found necessary to force the draught in order to obtain a greater evaporative capacity from the Bs. and to obviate the loss of heat in the chimney;

for it is obvious that if the gases in the chimney are at a high temp. to produce a draught, all the heat in them cannot have been used up for the production of steam. With *natural draught*, the draught depends on the height of the chimney and the temp. of the gases inside the chimney; this is the reason for the very tall chimneys to be found in some factories. Artificial draught is of 2 types: *forced draught*, in which air under pressure is forced into a closed ashpan and thence through the B., and *induced draught*, in which air is sucked through the B. by a fan or an ejector at the base of the chimney, and then discharged up the chimney. The only system of artificial draught that can be used on hand-fired Bs. is induced draught, since any pressure in the furnace causes flame to be blown out into the B.-room, when the fire-doors are opened for firing. A simple fan at the base of the chimney is used in many factories and power-stations, particularly those of small size; while on locomotives, the exhaust steam, instead of being condensed, is used as an ejector to create an induced draught. The latter system has the advantage of proportioning the draught to the load on the B. With the advent of mechanical stokers for land Bs., forced draught is being used more and more, often in conjunction with some type of air preheater; while the use of pulverised fuel is only rendered possible by forced draught. In the navy, and in some merchant ships, forced draught is combined with hand firing by means of the closed stokehold system. The B. room is made air-tight, and entrance thereto is obtained through air locks. Fans are arranged to force air into the stokeholds, thus putting the whole of the B. room under air pressure.

Transmission of Heat.—Heat is transmitted from the gases to the metal separating them from the water and from thence to the water. The gases transmit their heat to the metal much less readily than the metal does to the water. Steam being a gas, it is important to prevent bubbles of steam from adhering to the heating surfaces on the water side of the B. This is the reason why such stress is laid on proper circulation in a B. In the firebox and combustion chamber of a fire-tube B., and in the row of tubes immediately over the furnace of a water-tube B., heat is transmitted from the fire and furnace gases to the metal, partly by conduction, but mostly by radiation; in the rest of the B., conduction is the only means of transmission. This explains why up to 60 per cent of the evaporation of a B. takes place at the firebox and combustion chamber, or the first row of tubes, as the case may be. Scale on the water side of the B., and soot on the fire side, are both bad conductors of heat, and their presence greatly diminishes the rate of heat transmission and the efficiency of the B.

B. Clothing, etc.—To prevent the loss of heat from the surface of Bs. by radiation, they are covered with some non-conducting substance. The lagging employed

may be a coating of felt about 1 in. to 2 in. thick. This lagging suffers under the disadvantage of being combustible at high temps. Other laggings employed are asbestos, silicate cotton, and magnesite blocks. Water-tube Bs., as will be seen from their description later on, need this lagging even more than do fire-tube Bs., for their casings are often directly a portion of the furnace walls. In these cases the non-conductor is brickwork.

Corrosion and Inspection.—The causes to which corrosion is generally attributed are: the introduction of oil into the B., with consequent formation of organic acids; the presence in the feed water of air, which forms bubbles on the hot B. plates and oxidises them to iron oxide; electrolytic action, due to the presence of dissimilar metals, such as steel and copper, in the B., and in the case of marine Bs., sea water is the feed water, some of the salts present decomposing under the action of heat, to form hydrochloric acid. Corrosion shows itself as small pits and grooves in the B. plates and tubes. To prevent it, oil, air, and sea water must be kept out of the B. feed-water. One advantage of an economiser or feed-water heater is that the heating causes the air to separate out from the water. Where electrolytic action is suspected, plates of zinc are hung in the B. water; these being more electro-negative than steel, corrosion is transferred from the steel B. plates to the zinc; when this has wasted away, new zinc plates can be inserted. By the Boiler Explosions Acts, every B. must be examined thoroughly by a competent person at least once every 14 months; and a report of every such examination, in prescribed form, containing prescribed particulars, must be signed by the examiner, and entered within 14 days in the general register of the factory or workshop where the B. is used. On the occurrence of an explosion to a B., notice must be sent within 24 hrs. to the Board of Trade, giving full particulars.

Feed-water and Scale.—No natural water is absolutely pure, and different impurities in B. feed-water give rise to different troubles. Acids and air in the water causes corrosion. The presence of salts in the water, which are precipitated on evaporation, cause scale, which takes the form of a solid deposit on the heating surfaces of the B. Scale is a very bad conductor of heat, and in the worst cases, by not allowing the water to keep the B. plates cool, may cause overheating of the latter, and eventually an explosion. All possible means should therefore be taken to avoid scale formation. Temporary hardness in water—that is, salts that are precipitated when the water is heated, before actual evaporation takes place—is the chief cause of scale. It may be dealt with by suitable chemical treatment of the feed-water before use; by this means, the temporary hardness is converted into permanent hardness—that is, salts that are only precipitated when the water is boiled off from them. Such salts only cause a deposit when their concentration becomes very great indeed; before this

occurs, the B. should have been blown down and filled with fresh water. Feed-water heaters and economisers are also useful, since the preliminary heating causes the temporary hardness to be thrown down before the B. is reached. As a result of the low temp., this occurs as a mud, and not as hard stone-like scale, and so can easily be washed out.

Priming.—If a stop valve be opened too suddenly, or the B. be forced too hard, a lowering of the pressure in the B. takes place, and the steam being formed more rapidly, causes bubbles to rise violently, and carry water into the steam pipe with the steam. This is called priming. The presence of certain impurities in the feed-water also causes priming. It is prevented by the use of anti-priming pipes, and by taking off the steam at a point as far removed as possible from the water surface. A large steam space and a high pressure prevent priming. When no superheater is present, the water is carried over to the engine, and may cause actual breakage of the machinery. When a superheater is present, the superheated temp. and the efficiency of the B. are both greatly reduced, as the superheater has to boil off the entrapped water before it can perform its proper function.

Superheaters.—It has been found that the efficiency of all classes of steam engine is greatly increased by the use of superheated steam (*see STEAM ENGINES*); that is, steam heated above the temp. at which it boils off from water in the B. Superheated steam is quite dry and invisible, like hot air, and is different from the wet white vapour that issues from a kettle, known as saturated steam. The steam superheater, then, is a device fitted to the Bs. to improve the efficiency of the engines using the steam; it increases the B. efficiency very little or not at all; in many cases the B. efficiency is actually reduced. It consists, in all cases, of a set of tubes, placed in the way of the fire or furnace gases, through which the steam passes on its way from the B. to the engines. Superheaters are hardly ever fitted to cylindrical land Bs., and not often to Scotch marine Bs.; in the former case, heating or process steam gains nothing from being superheated (*see section headed Fire-tube Bs.*), and in the latter case, a superheater is regarded as unnecessary extra weight, which is, in addition, costly to maintain. Modern locomotive Bs., on the other hand, nearly always carry superheaters, while certain vertical Bs., used on steam railcars, are also superheated. Water-tube Bs. are fitted with superheaters as a rule, and are only exceptionally built without, nowadays. Care must be taken, in working Bs. fitted with superheaters, to prevent the superheater tubes being overheated and burnt when steam is shut off at the B.; dampers to deflect the furnace gases, or air valves to circulate air through the superheater, are sometimes fitted for this purpose.

Feed-water Heaters.—In order to increase the efficiency of a B., it is advantageous to heat the water before it reaches

the B. In a feed-water heater, this is done by means of steam from the engine, taken either from the exhaust, or from some intermediate point in the engine, where the steam has not finished its expansion; this is called 'bleeding' the engine, and is much practised in modern steam turbine plants.

Economisers.—In an economiser, the B. feed-water is heated by means of the residual heat in the furnace gases, after they have passed through the B. and superheater. By this means, heat is utilised which would otherwise be wasted up the chimney, and coal is saved which would otherwise be required to heat the feed-water in the B. Economisers are used on all types of land Bs., except where large steam turbines are installed (see above), and sometimes on marine Bs.

Air Preheaters.—In order to increase the efficiency of a B., it is advantageous to heat the air required for combustion before it reaches the fire. This is done by means of the residual heat in the furnace gases, after they have passed through the B. and superheater. Where an economiser is fitted there is hardly sufficient heat in the gases to make an air preheater worth while. In modern steam turbine plants, however, where feed-water heaters are used instead of economisers, something is needed to take up the heat remaining in the furnace gases, and here air preheaters are used; they are also often used with marine Bs. Air preheaters require some type of forced or induced draught, as the resistance they set up is too great to be overcome by natural draught.

B. Mountings.—In fire-tube Bs., it is necessary to have from 6 to 8 in. of water above the top of the tubes, combustion chamber, or firebox, whichever is the higher. If any fire-heated surface becomes uncovered by water, its temp. rises rapidly, which reduces its strength, and may cause an explosion. In water-tube Bs., the water level is usually about halfway up the top drum. **Gauge glasses** are fitted to the Bs. of all types, so that the level can be read, for it is evident that in any B. the amount of water present is of vital importance. In order that no accident can happen which will render the level unknowable, it is usual to have 2 gauge glasses. Further, all Bs. are fitted with at least 2 **safety valves**, which are set to the pressure which the B. is authorised to carry. They are locked up in such a manner that while the weight on them can be eased, so that they may allow the steam to blow off at a lower pressure than the designed one, yet it is impossible to screw them up to blow off at a higher pressure. This is a safeguard against tampering and reckless driving. They must be designed in such a manner that they are capable of getting rid of all extra pressure at a very quick rate; so that it is almost impossible for the pressure in a B. to get much above the designed pressure, however quickly the steam may be accumulating. All Bs. are also fitted with a **pressure gauge**, by which the steam pressure in the B. may be read. In addition,

every B. is provided with a **stop valve**, by means of which the steam generated is led off for use, and by shutting which the B. can be isolated, if necessary; a **check valve** of special design, so that feed-water can enter the B., but the water and steam inside cannot leave the B., and a **blow-down valve**, by which the B. can be emptied for repairs, inspection, etc.

Fire-tube Bs.—In this type of B., the steam and water are contained in a cylindrical barrel, traversed by a number of tubes or flues or both, through which the furnace gases pass, and by means of which steam is generated in the B. On land, fire-tube, or cylindrical Bs., as they are often called, are used to generate steam for heating buildings and factories, and steam required in manufacturing processes. At sea, cylindrical marine Bs. are used in cargo vessels, on account of their cheapness, and the confidence bred by many years of use. For railway work, the fire-tube locomotive B. has not yet been surpassed for lightness and rapid steam production in a small space. For portable work, the locomotive type B. and the vertical B. are the most generally used. In fire-tube Bs., the tubes are subject to external pressure, and care must therefore be taken in designing these Bs.; that the tubes are not liable to collapse. This consideration limits the pressure at which cylindrical Bs. can work. As small tubes are better able to stand pressure than large ones, the locomotive B., containing a large number of small tubes, is able to work at higher pressures than other types of cylindrical Bs. Fire-tube Bs. are of 3 types: horizontal Bs., locomotive Bs., and vertical Bs.

Cylindrical Land Bs.—All Bs. of this type consist of a horizontal cylindrical barrel, from 12 to 30 ft. long, and from 4 to 9 ft. in diameter, in which the water and steam are contained; this is traversed by one or more flues, containing grates on which the fuel is burnt, and sometimes by a set of fire-tubes as well. The variations in arrangement of flues and tubes give rise to the different kinds of cylindrical B. The **Cornish B.** possesses 1 flue, while the **Lancashire B.** (and its variant, the **Yorkshire B.**) contains 2 flues; the flues of the Lancashire B. are sometimes traversed by cross water tubes to increase the heating surface. The **Galloway B.** has 2 flues, which are merged behind the fires into one long kidney-shaped tube, which is stayed by a number of vertical water tubes, which also serve to increase the heating surface. The **Thompson B.** may be described as a Lancashire B. with corrugated flues, which increase both the heating surface and the strength of the flues. The **compound Cornish B.** has 1 flue, which terminates beyond the fire in a tube plate, from which a number of fire-tubes run to the back of the B. The **Economic B.** contains 1 or 2 flues, while the upper part of the barrel is traversed by a series of fire-tubes. The furnace gases pass along the flues to the back of the B., are turned up by a brick combustion chamber there, and

re-traverse the B., in a forward direction through the tubes. A Cornish B. is illustrated in Fig. 1. All these cylindrical Bs. are of well-ried design, simple, easy of access, and have a large water capacity. The Lancashire and Cornish Bs. are the basic types, and the other variations are attempts to increase the steaming capacity or efficiency. Cylindrical Bs. are chiefly

the same as 2 single-ended Bs. placed back to back, with the end plate of each removed, and the back plates of the combustion chambers of the 2 Bs. stayed to each other. Occasionally a common combustion chamber is fitted in a double-ended B., thus eliminating the water space and stays between the 2 combustion chambers; but this is found to give an

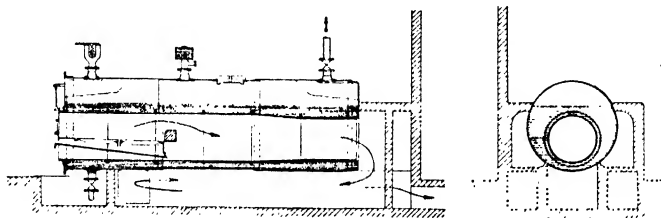


FIG. 1. CORNISH BOILER

used for heating, and in cases where simplicity and large reserve of power are preferred to high efficiency and rapid evaporation.

Scotch Marine Bs.—The original type of Scotch marine B. is the single-ended B. As will be seen from Fig. 2, the hot gases pass from the furnace to the combustion chamber, and thence through the tubes above the furnace flue, to the smokebox which is outside the B. There may be from 1 to 4 furnaces in this type B., but when there are more than 2 they are

unequal draught on the different furnaces, and to cause leaky tubes. The Scotch marine B. is made in sizes up to 20 ft. diameter, and is almost always hand fired. It is used extensively on cargo vessels, on account of its simplicity and reliability. Super-heaters are not often fitted, but air preheaters of the Howden type are sometimes used.

Locomotive Bs.—This type of B. has been developed with reference to the peculiar needs of the railway locomotive, which are, rigid limitation of size in the

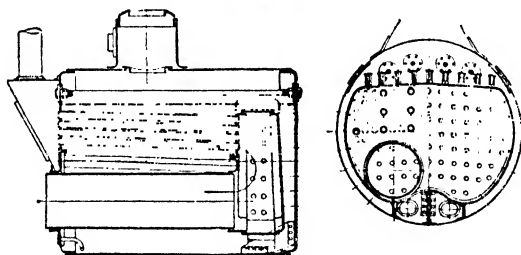


FIG. 2. SINGLE-ENDED SCOTCH MARINE BOILER

placed on different levels. The furnace flues are cylindrical and may vary in diameter from 2 ft. 6 in. to 3 ft. 6 in. They are generally corrugated to strengthen them against collapse, due to the pressure of the water outside them. Single-ended Bs. with more than 1 furnace may have 1 combustion chamber for all furnaces, as shown in the figure, or a separate combustion chamber for each furnace. The latter arrangement, though more complicated, distributes the furnace gases better through the tubes. The double-ended B. is provided with furnaces at both ends, and is practically

transverse and vertical directions and limitation of weight, liability to prolonged forcing together with rapid variation of steam supply, and complete freedom from trouble in service at the expense of high maintenance costs in the sheds. The coal in a locomotive B. (see Fig. 3) is burnt in a rectangular copper firebox at the back end of the B., which is closed at the bottom by an ashpan and grate, and surrounded on all other sides by water contained between the inner firebox and an outer steel shell; these 2 vessels are stayed together by a large number of steel or copper stays to prevent

the collapse of the inner firebox under the pressure of the surrounding water. In foreign locomotives, the inner firebox is often made of steel. The furnace gases are led forward from the upper part of the inner firebox by a large number of small horizontal tubes, surrounded by water contained in a cylindrical steel barrel; this barrel is connected at the back

and horizontal return tubes (within a vertical cylindrical shell) leading to an external smokebox, similar to the Scotch marine B.

Water-tube Bs.—In this type of B., the bulk of the steam and water is contained in one or more drums, placed out of the direct path of the furnace gases, while steam is generated in a large number of

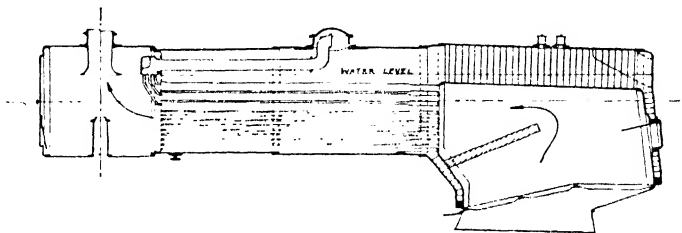


FIG. 3. LOCOMOTIVE BOILER

of the firebox outer shell, and is closed at the front by the smokebox tube-plate, through which the tubes discharge the gases to the smokebox and chimney. The tubes are generally made of steel though copper is sometimes used, and form the main heating surface of the B. Modern locomotives are usually fitted with superheaters; in this case, a number of the fire-tubes are made of larger diameter than the rest (e.g. 5 in. diameter, instead of 2 in. diameter), and each contains a double loop of seamless steel tube, known as a superheater element. The front ends of these elements are connected to the 2 chambers of a 'collector,' placed in the smokebox at the top of the smokebox tube plate; the one chamber receives wet steam from the B., while the other collects the superheated steam for delivery to the cylinders. Locomotive Bs. are nearly always hand-fired, though very large machines are sometimes fitted with a mechanical stoker, by which coal, suitably crushed, is distributed over the grate by steam jets. The draught, on locomotive Bs., is provided by the exhaust steam from the cylinders (see section headed *B. Draught*). Locomotive Bs. require frequent emptying and washing out, to remove the scale caused by different feed water, and the forcing of the B.

Vertical B.—A minor type of fire-tube B. which is only used where steam is required for small engines, cranes, or pumps, is the vertical B. It is fired internally, and takes up little space. It is made in 3 types. One of these may be represented by Fig. 4, which consists of a vertical cylindrical shell having a firebox and single flue, or up-take, between the firebox and the B. shell, fitted with cross tubes for the water. Another form is that shown in Fig. 5, which has the flue divided into sev. vertical tubes, each surrounded by water. The third type, the Cochran B., has a combustion chamber

tubes, connected to the drums, through which the water circulates. On land, water-tube Bs. are almost universally employed for power stations, and for factories which require steam for power purposes; cylindrical (or fire-tube) Bs. are generally only to be found in older installations. At sea, water-tube Bs. are used in the navy, and in the faster and larger steamships of the mercantile marine; slower and cheaper vessels, such

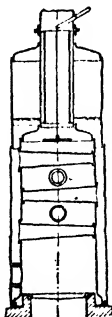


FIG. 4

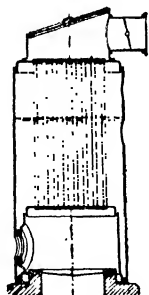


FIG. 5

VERTICAL BOILERS

as cargo boats, are generally fitted with cylindrical marine Bs. For railway and portable work, the water-tube B. has not yet proved suitable. In water-tube Bs. the tubes are subject to internal pressure, and are heated externally by the furnace gases; there is thus no danger of the tubes collapsing, and water-tube Bs. can therefore be made to stand much higher pressures than fire-tube Bs. The highest pressure used in general practice in fire-tube Bs. is 250 lb. per sq. in. (in certain

locomotive Bs.); while in power stations equipped with water-tube Bs., pressures of 500 lb. per sq. in. and upwards are nowadays considered normal. Water-tube Bs. are of 3 types: those with tubes slightly inclined to the horizontal, those with tubes slightly inclined to the vertical, and marine Bs.

Babcock and Wilcox B.—This is a water-tube B., whose heating surface consists of a series of inclined straight tubes over the furnace (see Fig. 6). Here the water is raised to a high temp., and rises through a series of separate connecting boxes or 'headers' of serpentine form, to a horizontal steam and water drum, where the steam separates from the water. The water remaining returns through the vertical tubes at the back of

riveted B. plate, and the headers of forged steel, while the B. is suspended on mild steel girders and columns; the sides of the B. are encased in brickwork. The fire is built under the front end of the tubes, and the gases are made to pass through the tubes 3 times by means of brickwork baffles. Between the inclined tubes and the drum is placed a superheater, consisting of steel tubes bent into a U-shape and connected to 2 'collectors,' the upper of which receives the wet steam from the B., while the lower one returns the superheated steam to the stop valve above the B. Babcock and Wilcox Bs. are extensively used in power stations, and are made in all sizes up to 10,000 h.p. Only the smallest sizes are hand-fired, the larger sizes being usually fitted with a

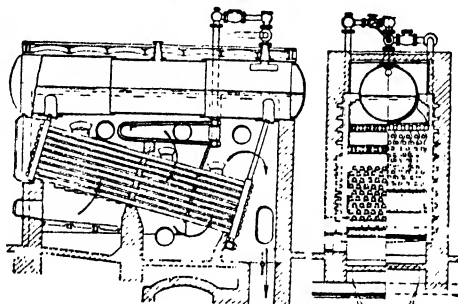


FIG. 6.—BABCOCK AND WILCOX BOILER, LAND TYPE

the B. into the inclined tubes, where it is subjected to the action of the fire, and again passes into the steam and water drum; thus a rapid circulation in one direction is kept up, and a uniform temp. maintained throughout the B. This circulation is characteristic of all water-tube Bs. A mud drum is attached to the lowest point of the inclined water-tubes, into which any matter held in suspension in the water is to a large extent precipitated, by reason of its greater specific gravity, during the circulation of the water. The Babcock and Wilcox B. is made in 2 types, known as the Marine type and the Land type; the latter is illustrated in Fig. 6.

In the Marine type, height and weight are saved by placing the steam and water drum transversely at the back end of the B., immediately above the back headers, instead of longitudinally on top of the inclined tubes. The front headers are connected with the drum by means of horizontal tubes. In both types of B., the tubes are of seamless steel. Opposite the end of each tube in the headers is an opening or hand-hole through which the tube can be examined and cleaned, each opening being closed by a forged-steel door and stud. Should a tube be found defective from any cause, it may be renewed or temporarily plugged, as both ends are accessible. The drum is made of

chain grate, or arranged to burn pulverised coal. In the latter case, the B. is mounted high up over a room-like combustion chamber, which may be lined with firebrick, but often has water walls, connected to the B., which help to generate steam.

Niclausse B.—This B. may be said to be a variation of the Babcock and Wilcox, in that it only has 1 vertical header, or water space, and that at the front of the tubes. It consists of a series of inclined compound tubes, joined up to the front vertical header, and closed at the far end. In order to gain circulation the header is divided, as is simply illustrated in Fig. 7, by a vertical diaphragm, AB. The inclined tubes are double, and the inner tube connects up with the outer portion of the header, while the outer tube connects with the inner portion of it. Thus circulation is maintained by the water passing from the B. down the front compartment of the header through the inner tubes, whence the steam water generated passes through the outer tubes and back through the rear compartment of the header to the steam and water drum. When a superheater is applied to this class of B., it is placed in the centre of the nest of tubes, about half way up, and not directly under the steam drum.

The Niclausse B. has the advantage that all tubes and joints are accessible

from the front of the B.; but against this is set the disadvantage of complexity. The Niclausse B. is used both on land and at sea, and in both cases the top drum is of the transverse type, as in the Babcock and Wilcox marine type B.

Multi-drum Water-tube Land Bs.—All Bs. of this type consist of 2 sets of drums, at the top and bottom of the B. respectively, connected by rows of nearly vertical water tubes. The upper or steam drums are interconnected by means of a few large tubes, which are not reckoned in the heating surface of the B.; the lower or mud drums are also similarly joined up. Different arrangements of drums and water tubes give rise to different types of Bs. The *Stirling* B. is shaped like a distorted letter w, the drums being placed at the 5 apices, and the

are suspended by the water tubes from the steam drums, and so are free to expand and contract according to the temp. of the B. The drums are made of riveted B. plate, with the seams away from the fire, while the tubes are weldless. The *Stirling* B. is a free steamer, with a good circulation, and is extensively used in power stations. The smaller sizes are hand-fired, while the larger ones are fitted with mechanical stokers. The tubes of the *Stirling* B. are curved to enter the drums radially, and this means that a large number of different shapes of tube have to be kept in stock for repairs. To avoid this, the *Thompson* and *Clarke-Chapman* Bs. have been designed. These each consist of 3 steam drums and 3 mud drums (in smaller sizes, 2 of each), connected by straight tubes. The drums

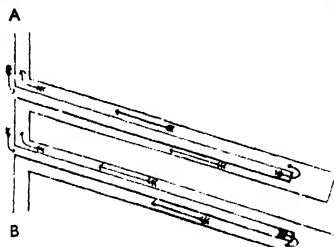


FIG. 7. DETAIL OF NICLAUSSE BOILER

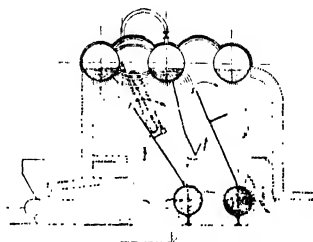


FIG. 8.—STIRLING BOILER

rows of tubes forming the body of the letter (see Fig. 8).

The feed water is led into the back steam drum, and then passes down the rear bank of water tubes to the back mud drum, there being no direct water connection between the back and middle steam drums, though the steam spaces are connected. The rear bank of tubes, being in contact only with furnace gases that have been cooled by passage through the rest of the B., serves chiefly to heat the feed water to the temp. of evaporation. The water then passes up to the middle steam drum, down to the front mud drum, and up to the front steam drum, where it disengages the steam that has been formed during the circulation. The remaining water passes across to the middle steam drum via the water-connecting tubes, where it joins with the new feed water, and passes down again to the front mud drum. The furnace gases pass over the water tubes in the opposite direction to the water, as shown in the figure. Steam is drawn off from the middle steam drum, and is taken through a superheater placed just behind the front bank of water tubes, before being delivered to the engines. The 3 steam drums are supported on brackets carried on mild-steel beams, which in turn are supported on mild-steel columns; these columns are built entirely independently of the brickwork, which only serves to contain the heat of the furnace. The 2 mud drums

of the *Thompson* B. are formed of 2 semi-cylindrical pieces, rivoted together; the portion into which the tubes are fitted is made of steel plate pressed hydraulically into a series of flats, giving right-angled surface and bearing for each tube, while preserving, in the main, the cylindrical form of the drum. In the *Clarke-Chapman* B., the tubes are fitted into a number of 'cross-boxes' of pressed steel plate, which are riveted to the drums, and provide a flat face for each row of tubes. Both these types of B. have 3 banks of tubes, the B. consisting, as it were, of 3 separate units (steam drum, bank of straight tubes, and mud drum), with connecting tubes between the drums as in the *Stirling* B. A superheater is usually placed between the first and second banks of tubes. The B. is supported on steel girders and columns, like the *Stirling* B. The *Bigelow-Hornby* sectional B. consists of a large number of standard units or sections, the size of B. being determined by the number of sections. The drums, which are comparatively small, are placed vertically instead of horizontally, and the straight water tubes are fitted into the flat ends of the drums.

Water-tube Marine Bs.—Sev. types of land water-tube B. are used on ships, such as the Babcock and Wilcox, the Niclausse, and occasionally the *Stirling*. Certain necessary modifications are made, of course, to suit marine conditions; for instance, the heavy brick furnace walls

are replaced by sheet steel and asbestos blocks, or even by an air space. But there is one class of water-tube B. which is only used on ships; this is shaped like an inverted letter V, or A, and consists of one main steam and water drum placed centrally over the fire grate, connected by 2 banks of inclined tubes to a couple of water or mud drums, one at each side of the grate. The furnace gases are divided and pass through the 2 banks of tubes, then up each side of the steam drum, finally reuniting above to pass up the funnel. The best known of these Bs. is the *Yarrow B.* (see Fig. 9), in which the tubes are nearly straight, and inclined at 45° to the horizontal. The feed water is

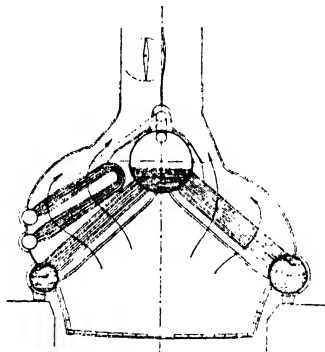


FIG. 9. YARROW BOILER

taken into the 2 mud drums, and is made to pass up the tubes remote from the fire by means of a partition inside the drum. When it arrives in the steam drum, it is caused to mix with the water there, and joins the main circulation of the B., which is upwards in the tubes nearest the fire, and downwards in the further tubes (with the exception of the few tubes reserved for the feed water). When a superheater is fitted, it is placed outside one tube bank, in which the number of water-tubes is reduced, in order to leave enough heat in the gases to superheat the steam. The superheater consists of a number of U-shaped steel tubes joining 2 cylindrical collectors. A damper is placed in the smoke uptake above the superheater, which can be closed when steam is shut off, to prevent burning the empty superheater elements. The drums of the Yarrow B. are made in 2 semi-cylindrical portions of steel plate, riveted together, the part to which the tubes are fitted being thicker than the other part. Yarrow Bs. are hand-fired if coal is used, but oil is frequently adopted, on account of its cleanliness, ease of refuelling, and reduction of stokehold personnel. Yarrow B. are very quick steamers, and give a high efficiency. At the time of their introduction, it was suggested that the

water in the Yarrow B. would not circulate, as the risers and the down-comers were not sufficiently differentiated. The *Thornycroft B.* was therefore devised, to give a positive circulation. Four large-diameter tubes are provided, outside the B. casing, at the ends of the drums, to connect the steam drum with the mud drums, and to act as down-comers. The water tubes which constitute the heating surface were made, in the original design, to curve round and join the steam drum above the water level, so that water could not pass this way from the steam drum to the mud drums, but had to use the down-comers outside. The water tubes acted as risers only. Nowadays it is known, however, that the Yarrow B. circulates perfectly well, and in consequence the tubes in a modern Thornycroft B. go as nearly as possible straight from the mud drums to the steam drum. The external down-comers are the only fundamental difference between the Yarrow and the modern Thornycroft Bs. The marine water-tube B. has the advantage over the Scotch B. of being lighter, quicker to raise steam in, and capable of withstanding a higher pressure. On the other hand, it has a smaller storage capacity.

Steam Accumulators.—It is always best for a B.'s efficiency to work under uniform load. Where the demand for steam is very variable, steam accumulators are sometimes installed. These are large cylinders of water under pressure (like a Cornish B. without a flue), into which steam from the Bs. is blown when the demand for steam is light. When the demand for steam is heavy, a slight reduction of pressure in the accumulator enables the steam to be given off again, and used to prevent the Bs. being overloaded. Thus a steam accumulator acts as a sort of flywheel on the Bs.

Recent Developments.—The modern tendency is in the direction of higher pressures, but superheat temps. do not show many signs of an increase beyond the present maximum of 850° F., due to falling off of strength, at high temps., of the steel of which superheaters, steam pipes, and turbines are constructed. Among high-pressure Bs. may be mentioned the *Benson B.*, which works at a pressure of 3200 lb. per sq. in.; at this pressure, steam has the same density as water, and is generated without ebullition—there is, in fact, no definite water line. The B. consists of a coil of steel tube, into one end of which water is forced, and from the other end of which steam issues. The *Locflier B.* consists solely of a superheater and a steam accumulator, with no B. proper. Steam at 1700 lb. per sq. in. is circulated by a pump from the accumulator through the superheater; of the superheated steam, a quarter is used for power purposes, while the other three-quarters is blown back into the water of the accumulator; the heat taken up in the superheater generates more saturated steam from the accumulator water, and this is re-circulated by the pump. In this B. there are no scaling troubles, all scale being deposited on the non-heated walls

of the accumulator. The *Wood B.* makes use of the fact that radiant heat is more effective than conducted heat; the *B.* consists of a furnace surrounded by water tubes, all of which are exposed to the direct action of the fire. So much heat is left in the furnace gases after passing these, that a superheater, an economiser and air preheater are fitted to utilise it. On locomotives, the *Gresley-Yarrow* water-tube *B.* (a modification of the *Yarrow*) has been tried experimentally, with a pressure of 450 lb. per sq. in. In marine *B.*, pulverised fuel is just beginning to be used. See H. L. Batley and E. G. Barber, *Boiler Plant Technology*, 1942; H. C. Armstrong and C. V. Lewis, *Boiler Management, Maintenance, and Inspection*, 1945; S. D. Scorer (ed.), *Steam Boiler Year Book and Manual*, 1948.

Boiling, see under COOKERY: WATER.

Bois, John (1561-1644), translator of the Bible, was educated at St. John's and Magdalene colleges, Cambridge. He was one of the translators for King James's Bible in 1604, and member of the board of revision. He trans. a portion of the Apocrypha and of the sections from Chronicles to the Canticles. He also assisted in Sir Henry Savile's ed. of Chrysostom (printed in 1610-13). He became prebendary of Ely in 1615.

Bois-Brûlés, from the Fr., meaning burnt wood, or the colour of burnt wood, name given by the Fr. Canadians to those of mixed white and Indian parentage.

Bois de Boulogne, a public park of Paris which has many walks, the largest of which forms a fashionable promenade.

Boise, cap. of Idaho, U.S.A., and co. seat of Ada co., situated on the Boisé R. in a mining dist. It is a military post, and though the chief industry is mining, it is also a manufacturing place. Pop. 26,100.

Bois-le-Duc, see 'S HERTOGENBOSCH.

Boissière, Sulpice (1783-1854), Fr. art collector. In conjunction with his brother Melchior and a friend Bertram he assembled the notable collection of 200 paintings, which was afterwards sold to the King of Bavaria.

Boissier, Marie Louis Gaston (1823-1908), Fr. scholar and critic, b. at Nîmes. Appointed prof. of rhetoric at Angoulême in 1846, and later at the Lycée Charlemagne in Paris. In 1861 he pub. his essay on Terentius Varro, and was appointed prof. of Lat. oratory at the Collège de France. He pub. *Cicéron et ses amis* (1865); *La religion romaine d'Auguste aux Antonins* (1874); *L'Opposition sous les Césars* (1835); *Promenades archéologiques* (1880-86); and *La Fin du paganisme en Occident* (1891). He was elected in 1876 to the Fr. Academy, of which in 1895 he was appointed perpetual secretary.

Boissy d'Anglas, François Antoine, Count of (1756-1826), Fr. statesman, b. at St. Jean-la-Chambre in Ardèche, and d. in Paris. He became a member of the States-General, and in 1794 aided the conspiracy to overthrow Robespierre. He was elected secretary of the Convention and member of the Committee of

Public Safety. His last honours were his presidency of the Council of Five Hundred, senatorship under Napoleon, and his elevation to the peerage by Louis XVIII. He wrote *Recherches sur la vie, les écrits et les opinions de Malesherbes*, 1819; and *Études littéraires et poétiques d'un vicillard*, 1826.

Boito, Arrigo (1842-1918), It. composer, was b. at Padua and studied at the Milan Conservatory. For some time he worked as a journalist in Milan and Paris, and he served under Garibaldi in Austria. He travelled much in France, Germany, and Poland, and in 1868 produced his opera *Mefistofele* at the Scala of Milan. It proved a failure, yet it has had much influence on It. composers, such as Verdi, Mascagni, and Leoncavallo. It was more successful when played in shorter form in 1875. His other operas are *Ero e Leandro* and *Nerone*. He destroyed the music of *Ero e Leandro* (an early work); *Nerone* was produced after his death, in 1924. He wrote librettos for his own works and those of other musicians including Verdi, and also pub. songs, novels, critiques, and dramas. Of his verse, the longest piece is *Re Orso*, a narrative poem describing the atrocities of the Minotaur. In 1912 he became a member of the Senate.

Bojador, Cape, a headland of W. Africa first doubled by Portuguese navigators in 1484.

Bojana, vil. in Bukovina, Moldavia. There was much fighting here during the First World War. Pop. 7000.

Boja, see BEJA.

Bojano, or Boiano, It. tn. on the R. Biferno which was anciently known as Bovianum. It is an episcopal see. In the Second World War the cathedral, a mainly modern building, was almost completely destroyed but the S. transept is intact. Pop. 6000.

Bok, Edward William (1863-1930), Amer. editor, b. Helden, Netherlands. Educated in the public schools of the Netherlands, he emigrated to the U.S.A., where he became famous as one of the most successful magazine editors of his time. He entered the employ of Cyrus H. K. Curtis and took charge of the *Ladies' Home Journal*, which he raised to the largest circulation among Amer. women readers ever known in the U.S.A. Author of *The Americanisation of Edward Bok*, 1922; *A Man from Maine*, 1923; *Twice Thirty*, 1925.

Boke, tn. of Fr. Guinea in W. Africa on the R. Nunez. About 45 m. inland, with trade in rubber and coffee.

Bokelmann, Christian Louis (Ludwig) (1844-94), Ger. painter, b. near Bremen; one of the foremost of Ger. genre painters. He was a pupil of Sohn at Düsseldorf Academy, winning fame for both serious and humorous scenes. Among his best works are: 'House of Sorrow', 1873; 'Pawnbroker's Shop', 1876 (in Stuttgart Gallery); 'Opening of the Will', 1879 (Berlin National Gallery); 'The Emigrants', 1882 (Dresden Museum); 'The Arrest' (Hanover Museum). In 1893 he was appointed prof. of Berlin Academy.

Bokhara, or **Bukkara**, formerly a khanate of Central Asia, now part of the Soviet Republics of Uzbekistan and Turkmenistan. From 1865 to 1921 it was ruled by emirs, nominally independent, but under Russian control. In the latter year a Soviet revolution broke out and the emir fled to Afghanistan and in the following year Enver Pasha, as commander-in-chief for the emir, led an anti-Soviet rising, but was defeated and killed.

Bokhara, or **Bukhara** (Old), formerly the cap. of the khanate, is a famous tn. of 50,000 inhabs. in an oasis in the middle of an arid plain, and in its prime it was the centre of Islamic culture. It is surrounded by trees and gardens, and is composed of one-storied brick houses with numerous mosques. It is (or was) a very important market for the products of Russia, Persia, India, and China, with its own industries of silk, cotton, leather, and cutlery. One section of the 7-m.-long bazaar was set apart for literature. There is a citadel containing the emir's palace and the water supply; and the city wall has 11 gates. The inhab. are Uzbeks, Turkomans, Afghans, Arabs, Hindus, and Jews. New Bokhara is a Russian tn. near the railway station. 8 m. from Old B.

Bokota, see **PESCADORES**.

Boksburg, tn. in the Transvaal, S. Africa, 13 m. E. of Johannesburg. It has a large mining industry. Pop. 12,000 whites.

Bol, Ferdinand (1611-81), Dutch painter, b. at Dordrecht. His subjects were chiefly portraiture. At one public exhibition he was declared to have excelled Rembrandt, but he degenerated into a bad imitator in his later years. Many of his pictures are to be found in the museum at Amsterdam, while his 'Four Regents of the Leprosy Hospital,' generally regarded as his masterpiece, is in the tn. hall.

Bola-bola, see **BORA-BORA**.

Bolama, tn. on the is. of the same name, situated at the mouth of the Rio Grande, W. Africa.

Bolan Pass, defile in the Hala Mts. of Baluchistan leading into Sind. It is about 55 m. in length, and its greatest elevation is 5800 ft. On all sides there are steep precipices, and it is traversed by the Bolan R., frequently bridged over. The pass is so narrow that it is easily defended, and it is overlooked by the fortress at Quetta. A railway has been constructed through it to connect it with the Indus valley.

Bolaram, a former Brit. military cantonment, now part of Secunderabad, in the state of Hyderabad, India. Pop. about 10,000.

Bolas (Sp., balls), a hunting weapon used by natives and gauchos of S. America, especially by the Paraguay Indians and natives of Argentina. There are 2 varieties constructed on slightly different principles, one being made of 2 stone or clay balls covered with leather and connected by a rope or thong of 6 or 8 ft., the other being made of 3 balls connected by 3 short thongs which unite to form a long

rope. The hunters, on horseback, throw them at the animal in such a way as to entangle its legs and prevent escape.

Bolbec, tn. in the dept. of Seine-Inferieure, France, on the R. Bolbec, 19 m. from Havre. The riv. supplies water power for the mills, and this busy and thriving tn. manufs. cotton, woollen, and linen goods, has dyeworks and tanneries, and trades in grain and cattle. Pop. 10,000.

Bolbocer, coleopterous insect of the family Scarabaeidae, members of which are usually called chafer. Their most common colour is brown or yellowish, and sometimes black; *B. mobilicornis*, a pitchy-black species, and *B. testaceus*, an ochre-coloured species, have been found in England.

Bolcke, Captain von, Ger. naval officer; commander of the battleship *Pommern*. At the battle of Jutland, May 31, 1916, the *Pommern* was a unit of the Ger. 2nd Battle Squadron and was sunk. Bolcke went down with her.

Bold, Samuel (1649-1737), Eng. controversialist, was made vicar of Shapwick, Dorsetshire, in 1674. He resigned this living and in 1688 was instituted rector of Steeple, Isle of Purbeck, to which Tyneham was united in 1721. Here he remained until 1737. In 1682 he preached and pub. a sermon against persecution, and followed it with a *Plea for Moderation towards Dissenters*, for which he was fined and imprisoned. His works include tracts defending John Locke's philosophy.

Boldrewood, **Roll**, pseudonym of **Thomas Alexander Brown** (1826-1915), Anglo-Australian novelist, who was b. in London and crossed to Australia in 1830. He received a good education at Sydney College. In 1844 he became a squatter in Victoria, and later police magistrate and commissioner of the New S. Wales goldfields. In 1888 he pub. his most popular work, *Robbery under Arms*, which had appeared in serial form 8 years earlier, attracting little notice, and in 1894 *A Modern Buccaneer*. Other books include *The Squatter's Dream*, *The Miner's Right*, and *Old Melbourne Memories*. He retired from the goldfields in 1895, and afterwards wrote many stories of adventure.

Bole, hydrous aluminium and iron silicates, found in Armenia, Saxony, Tuscany, S. America, Ireland, and the isle of Skye in Scotland. In form the substance resembles clay, and is of a dull yellow, brown, or red colour, while it adheres to the tongue, feels greasy, is yielding, and has a conchoidal fracture, and the streak is shining. The prin. varieties are Armenian and Lemnian, which are used as pigments and in medicine, but only to a restricted extent.

Bolero, a Sp. national dance, quicker than the fandango; the name is applicable also to the dance music. It is in 3-4 time, and of eighteenth-century origin. The performers are usually accompanied by castanets, and the movements are expressive of the various stages of the emotions of love. The term is also used of the air to the dance. Dr. Scholes states that the dance is almost identical

with the cachucha, and that it may be accompanied by the performers' own voices. Grove and Bloom and other authorities mention only castanets; yet others add the guitar. Ravel's *Bolero* for orchestra is famous, as also Chopin's *Bolero* for piano.

Boletus, generic name of fungi of the sub-class Basidiomycetes generally found growing on the ground in woods and meadows, especially in pine woods. Some species, such as *B. edulis*, are eatable, but many others are acrid and dangerous.

Boleyn, or **Bullen**, Anne, second wife of Henry VIII., daughter of Sir Thomas B. She was appointed maid of honour to Mary, sister of Henry, and accompanied that princess to France in 1514. She returned some time after 1522, and soon became of importance in the Eng. court. Her guile and wit won Henry's favour, and her father was honoured. She refused to become the king's mistress, and determined to become queen. The removal of Catherine was thus necessary. Henry in 1524 resolved to break his marriage, on the ground that although a papal dispensation for his marriage with his brother's widow had been granted, Heaven had not sanctioned it. However, Clement VII. was in the power of Catherine's nephew, Charles V., and much as he might desire to conciliate Henry, dared not offend Charles. Meanwhile, Anne had been installed in the same palace as Catherine with royal honours. Henry's love letters to her form one of the most curious collections in our literature. Furious at the repeated delays of the papal court, Henry vented his wrath on Wolsey, who was dismissed in 1529, and on the advice of Cromwell, appealed to the univs. On Jan. 2, 1533, Henry was secretly married to Anne, and later she was crowned. On Sept. 7, at Greenwich, was b. the Princess Elizabeth. Anne's frivolity soon began to displease her royal husband. On Jan. 6, 1536, Catherine d., sending a letter of forgiveness to the king. It is said that Anne's heartless reception of the news finally estranged Henry, but it is certain that during the early months of the year there were quarrels. Finally, at a tilting match on May 1, 1536, a harmless act of gallantry by Sir Henry Norris made Henry's anger burst forth. On May 2, Anne was committed to the Tower; on the 17th, she was tried for adultery by a court of 24 peers, under the presidency of her uncle the duke of Norfolk, and condemned to be burnt or beheaded, according to the king's pleasure. The evidence brought forward has been lost, but it seems probable that her greatest crimes were vivacity, and not bearing an heir to the crown. Moreover, she was hated by the Catholics as being a 'spleeny Lutheran.' She was beheaded on the 19th, Henry ostentatiously wearing white: on the next day he married Jane Seymour. See P. Friedmann, *Anne Boleyn*, 1884; M. A. S. Hume, *The Wives of Henry VIII.*, 1905; P. Sargent, *Anne Boleyn*, 1934.

Boleyn, Sir Thomas (1477-1539), Eng. statesman, father of Anne B. Fought with his father against Cornish rebels,

1497; 1509 became keeper of the exchange at Calais and of the foreign exchange in England. Joint constable of Norwich Castle, 1512. B. was employed on a number of diplomatic missions during Henry VIII.'s reign, and held many high offices, doubtless owing largely to his daughter's influence with the king. He went with Poyning on an embassy to the Low Countries; invaded France, 1513. 1517 became sheriff of Kent; 1519-20 on an embassy to Francis I., negotiating the preliminary arrangements for the Field of the Cloth of Gold. 1521 he was one of the commission by which the duke of Buckingham was condemned; Wolsey's agent in Calais in the autumn. Earl of Wiltshire, 1529; lord privy seal, 1530. Ambas. to Charles V., on the business of Henry's divorce. See *Calendar of Henry VIII.* (iv.).

Bolgary, vil. in the Tatar republic, R.S.F.S.R., on the R. Volga. It is built on the site of the ant. city of Bolgar or Bulgar, the old cap. of the Bulgarians, of unknown antiquity, but now consists of less than 200 houses. It still contains ruins of its former glory, and coins, implements, and inscriptions have been discovered during excavations. It was sacked by Tamerlane in the fourteenth century. Pop. about 1000.

Bolgrad, tn. of Bessarabia, formerly in Rumania, ceded to U.S.S.R. in 1920; centre of soap, tallow, and brick-making industry. It is situated at the N. extremity of Lake Yalpuh. Pop. 14,000.

Boli (Gk. πόλις, city), tn. of Asia Minor, Turkey, in the prov. of Kastamuni on the R. Boli. It manufs. cotton and woollen goods. Pop. 10,000.

Bolide (Gk. βολίς, a missile), a fireball or meteoric body of greater brilliance and slower motion than the ordinary 'shooting star.' See AEROLITE; METEOR.

Bolingbroke, Henry St. John, Viscount (1678-1751), Eng. statesman. *b.* at Batterssea. He was educated at Eton. He was a schoolfellow of his great opponent Sir Robert Walpole, and was returned to parliament in 1701 for Wootton Bassett in Wiltshire. By his eloquence in debate he was soon able to command the attention of the House of Commons, and he attached himself to the Tories, at this time led by Harley. In 1704 he became secretary at war, in 1708 he retired with Harley, and in 1710 he came back to office in another of Harley's ministries. He was responsible for the treaty which was made secretly with France to end the war of the Sp. Succession. In 1712 he was made Viscount B. and Baron St. John. In the meantime a quarrel had taken place between Harley (now earl of Oxford) and B. which Swift attempted to patch up, but which in spite of all efforts still continued. The whole energies of the 2 ministers were now concentrated on the events which were to follow the death of Anne, an event which was now expected. Both were pledged by correspondence to the Old Pretender. The quarrel with Harley ended in victory for B., and Harley left the ministry. B. was now supreme, and

his extreme Tory policy was favoured by the queen, whilst his attitude towards Hanover also found high favour at the court. Jacobite restoration seemed inevitable when the queen *d.* suddenly, and B. was ruined by the action which led to the appointment of the earl of Shrewsbury to the lord-treasurership. He was certainly intriguing with both parties, but on the accession of George I. he was dismissed. In 1715 he attempted to defend his ministry against the attacks of the new parliament, and in the same year fled to Paris from the threatened attack on the treaty of Utrecht by Sir R. Walpole. He entered the service of the Old Pretender, but after the failure of the 1715 rising was dismissed. He now attempted to enter Eng. politics again, but was not pardoned until 1723. By means of bribing the king's mistress, the duchess of Kendal, he was able to obtain privileges, and at last seemed to be on the point of obtaining a ministerial appointment when his hopes were again dispelled by the death of George I. He retired into private life in 1735, and continued his writings and his intimacy with many of the leading men of letters of the day. He wrote many books, amongst which may be mentioned *Reflections on Exile, Letters on the Study of History, The True Use of Retirement, and the Patriot King*. His reputation as a man of letters is not so great to-day as it was during his own time. His *Patriot King* was the text-book from which Bute attempted to teach George III. the elementary principles of kingship. He was buried at Battersea. His collected works (incomplete) were ed. by D. Mallet, 1754. See lives by T. Macknight, 1863; A. Hassall, 1889, 1915; Sir C. Petrie, 1937.

Bolitophagus, genus of coleopterous insects of the family Tenebrionidae; they are closely related to the meal-worm. Like other genera of this family, they live on fungi, but especially on boleti. *B. apaticola* occurs in Britain.

Bolívar: (1) Dept. of Colombia, S. America, the coastline of which forms the E. shore of the gulf of Darien. It is densely wooded and has an area of 23,000 sq. m. Cap. Cartagena. Pop. 968,000. (2) State of Venezuela, bounded on the N. by the Orinoco R., on the E. by the ter. of Yuruari, and on the S. by Brazil. The cap. is Ciudad B., better known as Angostura. Pop. 94,000, of whom 23,000 are Indians. (3) A small prov. in central Ecuador. Pop. 99,000. The cap. is Guaranda.

Bolívar, Simón (1783-1830), El Libertador, the hero of S. Amer. independence, b. in the city of Caracas, in Venezuela. He was descended on both sides from noble Venezuelan families. He studied in various European caps., especially in the law schools of Madrid, and was the witness of the final scenes in the Fr. revolution in Paris. He married in 1801, and returned to Venezuela, where, however, he did not long remain, the death of his wife very shortly after their marriage resulting in his return to Europe (1804). His visit to the U.S.A. in 1809 resulted in

his joining the party of independence in Venezuela, and he was given an important post to defend in 1811 on the declaration of Venezuelan independence. The attempted revolt was, however, a failure, and B. fled to Curaçao. In 1812 he joined the insurgents at New Granada, and at the head of a small force, forced the crossing of the R. Magdalena, and with 500 men pushed on to victory and proclaimed war to the death. His success was only transient, and in 1814 his defeat by Boves, and the success of the royalists generally, forced him again into exile. He went to New Granada, and from there to Kingston, where an unsuccessful attempt was made on his life. Undaunted by the ill success of a landing on the mainland in 1816, in the following year he was successful in driving the royalists before him and in reaching and making his headquarters at Angostura. Here a congress was held in 1819, and afterwards he joined forces with the republicans of New Granada, and was entirely successful. He was now generally recognised as the hero of liberation. He succeeded in uniting Venezuela and New Granada into one republic of Colombia, and was successful in his attacks against the Spaniards, who may be said to have been finally defeated at Carabobo in 1821. In the same year the constitution of Colombia was adopted, and B. became the first president. The next year he added Ecuador to the republic, and was later called to the help of the Peruvians, who were fighting for independence. At the end of 2 years' hard fighting their independence was won, and in 1825 the upper part of Peru changed its name to Bolivia in his honour. The constitution prepared by him for that country, however, did not prove popular owing to its arbitrary proposals, and was finally rejected by the Bolivians. He was, however, again elected president of the Colombian republic, but his dictatorial methods had roused general alarm, and the dread of a dictatorship put aside all past services. In 1829 Venezuela separated from Colombia, and in 1830 B., being voted a pension of 3000 dols., conditional on his residence elsewhere, resigned his power in Venezuela. His life and his fortune were given for the liberation of S. America, and his influence purified financial and judicial methods. His adoption of dictatorial methods was almost justified by his position, and he certainly was successful in creating a new spirit of independence and liberty in S. America. See V. A. Belaunde, *Bolívar and the Political Thought of the Spanish American Revolution*, 1938; T. Rourke, *Simón Bolívar*, 1940; E. Ludwig, *Bolívar: the Life of an Idealist*, 1948.

Bolivia, the third largest political div. of the continent of S. America. It is continuous with 5 different states, having Brazil on the N. and E., Peru and Chile on the W., and Argentina and Paraguay on the S. Its boundaries are purely conventional, following practically none of the physical features of the land, and cannot be altogether accurately stated,

since they are continually the subject of dispute. It extends practically from $9^{\circ} 44'$ to $22^{\circ} 50'$ S. lat., and 58° to 70° W. long. Its area also cannot, owing to disputes, be accurately stated, but (excluding contested claims) is 514,155 sq. m. According to other estimates it is much more, and according to Bolivian claims, at least 600,000 sq. m. (the boundary between B. and Peru in the peninsula of Copacabana from the R. Suches to the N. of Lake Titicaca, has been delimited by a joint commission, and still remains to be ratified. That between Argentina and B., as determined by treaty ratified in 1889, was under review in 1925; B.

the name given to the section of the Andes on the E. side of Titicaca. In this group are found the Sorata (23,000 ft.) and the Illimani (22,500 ft.). A remarkable feature of B. is the great table-land lying between the Andes and the Cordillera Real, which has an elevation of over 12,000 ft., and which contains the Lake Titicaca. The lake is about 120 m. long, and has a depth of about 120 fathoms. It lies partly in B., partly in Chile, and partly in Peru. Though B. has no coastline, it has a complete navigable water system, Lakes Titicaca and Poopó being connected by the R. Desaguadero, 180 m. in length. Although B.



AYMARA INDIAN WOMEN OF BOLIVIA

E.N.A.

ratified the substituted agreement in 1929, and Argentina in 1939. The pop. in 1900 was 1,744,568, but estimated in 1939 at 3,227,000. Its pop. may be divided into 3 fairly well-defined groups—the aborigines, Indians, who number between 200,000 and 300,000; the mestizos, natives with a slight European strain, who number nearly 1,000,000; and Europeans, who number between 600,000 and 700,000. Naturally, an ill-assorted pop. such as this is liable to become a standing menace to the gov., and during the frequent disorders in B. they have often been a source of grave danger to the stability of the state. Cap. La Paz (pop. 302,000). B. adopted the gold standard for its currency in 1928, when the gold boliviano was made the unit, but most of the currency in circulation is paper.

Physical features.—In B. the Andes approach closely the Brazilian uplands. In the W. dist. there are 2 main ranges, the W. Cordilleras, which divide B. from Chile, and the Cordillera Real, which is

usually taken to be a very mountainous country, in reality at least three-fifths of it is made up of low-lying and swampy ter. In the N.E. there is an extensive plain, which is both well watered and well wooded, and is valuable for its supply of timber trees. The prin. rvs. are the Paraguay, the Pilcomayo, and, belonging to the basin of the Amazon, the Mamoré, the Beni, the Guaporé, and the Mochupa. The Culquite dist. forms part of the *yungas* zone, a name applied to the hot E. slopes of the Cordilleras which merge into the wooded plains of the Amazon. B. lies in the torrid zone, and its climate depends upon the elevation, and not upon the lat. In the mt. heights perpetual winter reigns, some of them being uninhabitable; between the elevations of 11,000 and 9000 ft. the climate is of the temperate zone; whilst in the *yungas* zone the climate is tropical, producing all tropical fruits and vegetation. The plains are hot and moist, and covered with dense forests. The indigenous flora comprises the palm, the cinchona, the

bamboo, maté, and coca. Other productions of B. are balsam, bananas, caoutchouc, vanilla, copal, coffee, cotton, sugar, potatoes, and tobacco. Amongst its indigenous animals may be mentioned the llama (the beast of burden), alpaca, vicuña, guanaco, chinchilla, viscacha. All forms of S. Amer. bird life are found here.

Minerals and vegetable produce.—B. is still famous for its silver mines, but tin is now the most valuable mineral, constituting in value 90 per cent of B.'s exports. One quarter of the world's supply of tin is now mined in B. Other metals which are found in large quantities are antimony, copper, and gold; lead, mercury, bismuth, zinc, and iron are also found in fair quantities. In the S. provs. salt is found in large quantities, but coal appears to be rare. In the S. is a petroleum-bearing country of great promise. Amongst the other products of the country may be mentioned wheat, barley, and other cereals, the production of which is, however, retarded, as is agriculture generally, by the lack of a good system of communications. The lower zone is remarkably adapted for the production of maize, cotton, and tobacco, but these industries are not developed. The chief agric. products, besides cereals, are potatoes, highland rice, cacao, coffee, and rubber.

Communications.—The internal communications are in general bad, in some parts of the country bridle roads forming the only means of transport. Railways are beginning to be developed, and there are now 1900 m. of railway in the country (over 500 of which are state-owned). The prin. line is the Antofagasta and Bolivian railway (total length in B., 744 m.). Under a treaty with Chile (1904) the Arica-La Paz line (276 m., of which 150 m. are in B.) was built from La Paz to Corocoro. Two treaties concluded with Brazil in 1938 provide for joint construction of a railway from the dept. of Sta. Cruz de la Sierra to a point near the riv.—port of Corumba in Brazil. By means of the railways which run through Peru to Mollendo, and through Chile to Zutofagasta and Arica, B. exports its minerals which form four-fifths of its total export. Another railway which has been of great use to B. is the Madeira-Mamoré line of Brazil, which, by circumventing the 200 m. of rapids on the Madeira R., enables the riv. system of N. B. to be linked with the Amazon and the Atlantic. Rubber and timber are transported by this route. Tupiza in the far S. is connected to the Argentine railway system, and in the S.E. there is a small port, the Puerto Suárez, on the R. Paraguay. A treaty with Brazil in 1938 provides for joint construction of a railway from Santa Cruz de la Sierra in B. to a point near Corumba in Brazil. Steamboats are employed on Lake Titicaca and the R. Desaguadero, and a commercial aviation company was started in 1927.

Constitution, etc.—The first constitution was dated Oct. 1830. A new one in 1938 vested the executive in a president elected

for four years, and not eligible for re-election until four years after his term had ended. There is a bi-cameral congress consisting of a senate of twenty-seven members elected for six years, and a chamber of 110 deputies elected for four years. Under a constitution adopted in 1945 the presidential term was extended to six years; but a revolution of July 1946 largely overturned it. The congress elected in 1947 was charged with the task of revising the 1945 constitution. B. is divided into 9 depts. Owing to early rivalries, it has what amounts to 2 caps., Sucre being nominally the cap. and La Paz the actual seat of gov. Both have univs., that at Sucre, founded in 1624, being one of the oldest in America. The state religion is Rom. Catholic, but the principle of toleration is accepted. Education is free and supposed to be compulsory, but is in a somewhat backward state. There are, however, nearly 1600 elementary schools and 27 colleges for secondary education. Military service is compulsory, and there is a small standing army (national guard).

History.—At the time of the Sp. conquest in the sixteenth century B. was part of the Inca empire. Rulus at Tiabuanaco, S. of Lake Titicaca, testify to a still earlier civilisation, that of the Aymaras. Under Sp. rule it formed part of the viceroyalty of Peru, being known as Alto Perú, or Charcas. The silver mines of Potosi gave it then a position of great importance. In 1776 it was separated from Peru and added to the viceroyalty of Buenos Aires. In the war of Independence, 1810-24, the royalists long held their ground here, but were finally defeated at the battle of Ayacucho. Union with the Argentine provs. was declined, and the republic of B. was formed, its constitution being framed by Bolívar, and Sucre becoming the first president. On Bolívar's departure, however, the constitution was overthrown and civil wars and party strife broke out. In 1838 there seemed some prospect of B. allying itself with Peru. Strained relations with Chile, arising from the working of the guano beds of the Pacific coast, were adjusted in 1866. In 1879 B. and Peru entered into a 4 years' war with Chile, which ended in their defeat. A frontier dispute with Brazil was settled in 1903, Brazil then undertaking to build the Madeira railway. In the first 10 years of this century B.'s exports increased in value 235 per cent, and this was still further augmented by the great demand for minerals during the First World War. In 1917 B. severed relations with Germany. Increased prosperity brought greater tranquillity for a time, but in 1928 a boundary dispute with Paraguay, its S. neighbour, brought both nations to the verge of war. The dispute was, however, submitted to an international commission for mediation in 1929.

The political situation in B. became unsettled owing to the autocratic gov. of Dr. Hernando Siles, who was elected president in 1926. In that year he suspended various civil rights which had been

assured to the people by the Constitution, and by an arbitrary decree invested himself with dictatorial powers, formed a ministry of his own adherents, and amended the Constitution to secure his re-election. His obvious intention to continue to rule B. at all hazards caused a revolution in 1930, which, begun by students and workmen, was taken up later by the mob in La Paz and at length supported by the army, with the result that Dr. Siles had to escape from his residence on the heights overlooking the cap., while the military directorate, under Gen. Blanco Galindo, took the reins of gov. The return to civil gov. took place early in 1931, the provisional gov. holding a presidential election, when Dr. Daniel Salamanca, the nominee of both liberal and republican parties, was elected. Various constitutional changes, designed to decentralise the gov., were carried through. It was hoped to make the establishment of dictators more difficult, but indeed the hist. of B. shows that the country has had no fewer than 70 dictators from the time of Santa Cruz in 1828, while the long bitterness of the Chaco war with Paraguay was not calculated to make the path of the liberal elements easier. The Chaco war began in 1932—though the dispute over the boundaries is of 50 years' standing—and dragged on intermittently for some years. In 1933 the League of Nations, on the suggestion of the belligerents, invited the Argentine to mediate together with Peru and Chile; but these nations declined to intervene. The war actually ended in 1935 (Oct.) when Paraguay, by the peace treaty, ceded to B. a free zone at Port Casado on the Paraguay R. But this did not really end the dispute, and the underlying cause of the war was removed only when Argentina agreed to grant land-locked B. an outlet for her oil through Argentina. In 1937 a bloodless coup was carried out by malcontents in the army, who ousted the provisional president, David Toro, and installed Col. German Busch, chief of the general staff, in his place. Not long afterwards the Cabinet decided to give up experiments in State Socialism, to reinstate the 1880 Constitution, and to return to a democratic republican form of gov. The parliament elected in 1938 had 103 members, and almost all were members of the United Socialist Front. This parliament adopted a new constitution in May 1938, and then adjourned for a long time. Though the Cabinet at this time was predominantly Socialist, the so-called Socialists were in fact a kind of fascists, and B. was then virtually under a military dictatorship. Some social legislation was passed, but there was no attempt to nationalise wealth. In Aug. 1939 President Busch was shot mysteriously, and succeeded by Col. Quintanilla, who, in 1940, gave place to Gen. Penaranda. Probably the general opinion of the country was anti-Axis. At all events in Mar. 1942 B. broke off relations with the Axis powers, and in Apr., a year later, declared war on them. A revolutionary movement under the National Revolu-

tionary party, together with army officers, overthrew President Penaranda in Dec. 1943, the ostensible reason being opposition to the suspension of the municipal elections, and of all constitutional guarantees. A new gov. was formed under Maj. Villarreal, deputy chief of the Bolivian general staff. This party was believed to be a left-wing movement strongly opposed to 'big business,' and vehemently nationalistic. But according to Mr. Cordell Hull (*q.v.*) information available in America strengthened the belief that the forces outside of B., and unfriendly to the defence of the Amer. republics, inspired and aided the revolution. Ex-president Penaranda said that the coup was engineered by the fifth column (*q.v.*), and he alleged that the new gov.'s professions of democracy and solidarity with the United Nations were designed merely to secure foreign recognition.

Bibliography: L. Niessen-Beiter, *Land of the Condor* (in *Living Age*, 1927); C. H. Producers, *Adventures in Bolivia*, 1922 (New York); H. A. Grey, *The Land of To-morrow*, 1927 (London); J. Carrasco, *Bolivia ante la Lega de las Naciones* (Rio de Janeiro), 1920; A. V. L. Guise, *Six Fears in Bolivia* (London), 1922; W. L. Schurz, *Bolivia: a Commercial and Industrial Handbook* (Washington), 1921; L. Linke, *Andean Adventure*, 1944.

Boliviano, monetary unit of Bolivia. The silver B., nominally worth 1s. 7½d., is divided into 100 centavos.

Bolkhov, dist. and tn. in Orel region, R.S.F.S.R.; centre of trade in leather, hemp, and cattle. Pop. 27,000.

Boll (O.E. *bolla*, cf. the Eng. bowl), old Scottish measure, used for grain. It is still in vogue in many parts of Scotland, although it is not recognised by law. It is used also in the N. cos. of England and in the Isle of Man. The wheat B. is the equivalent to 4 or 4½ bushels, and this answers for peas, beans, etc. The potato B., however, is from 8½ to 9 bushels. A B. of flour or meal is supposed to be 140 lb. avoirdupois. A B. of land is about a Scottish ac.: a B. of canvas measures 35 yds.

Bollandists, see BOLLANDUS, JOHN VAN, and ACTA SANCTORUM.

Bollandus, John van (1596–1665), a Jesuit of the Low Countries, has given his name to the Bollandists, a Jesuit association by whom the *Acta Sanctorum*, a collection of the lives of the saints of the anct. Rom. and Gk. and the modern Rom. calendar, has been pub. B. took up the work at the death of Heribert Rosweyde of Bois-le-Duc, who had already conceived the idea and d. in 1629. B. settled in Antwerp and associated himself, personally and by correspondence, with Jesuits all over Europe, enlarging the scope of the work as he amassed fresh material. In 1643 he issued the 2 vols. for Jan., and in 1658 the 3 for Feb., the work being continued after his death.

Bollene, tn. of France, in the dept. of Vaucluse, 22 in. N. of Avignon. Industries: silk spinning and manuf. of castor oil. Pop. 5500.

Boll Weevil, or Boll-worm, name given

to the larvae of various noctuid moths which attack the bolls or seed pods of the cotton plant. The common B. W. (*Heliothis armigera*) is a serious pest not only of cotton, but of many other cultivated crops in America, Asia, and Africa. The cotton weevil, which, during the last 40 years, has become such a serious plague in America, is a minute insect, the adult beetle attaining a maximum length of about $\frac{1}{2}$ in., half of which is its long proboscis used for boring purposes. The eggs are laid in the buds of the cotton plant during the spring, and after passing through the larval and pupal stages, become adults capable of breeding in 2 or 3 weeks (the period of development from egg to adult; the adult, thereafter, begins to breed in about 5 days). In the winter hibernation of the beetles takes place in fields, outhouses, and rubbish heaps.

Bollington, mkt. tn. of Cheshire, England, 3 m. N. of Macclesfield. Pop. 5000.

Bolo Pacha (Paul Bolo), Fr. traitor who from an early age lived on his wits. He undertook sev. businesses, but they all failed. In 1905 he bigamously married a rich widow and lived lavishly in Paris; was imprisoned for financial fraud; created pacha in 1914 by the khedive, to whom he proposed financial schemes. During the First World War he turned traitor, being employed by Germany to influence the Fr. press in favour of a separate peace so that Germany would be free to attack England. He was brought to trial, sentenced to death, and was shot at Vincennes, Apr. 17, 1918.

Bologna, prov. of the region of Emilia-Romagna, Italy. Its irrigation system is of great value in the cultivation of its rice fields. It raises large numbers of silk-worms.

Bologna, city of Italy, the cap. of the prov. of that name and the archiepiscopal see for Emilia. It is situated on the edge of a fertile plain and at the crossing of 2 great railways. It lies in lat. $44^{\circ} 29' N.$, long. $11^{\circ} 21' E.$ It is a rectangular city surrounded by a high brick wall, entered by 12 gates and intersected by the Reno Canal. The new part of the city is noted for the magnificence of its colonnades, its well-paved streets, and its fine buildings. In the older part of the city the streets are narrow and dirty, and cannot be compared with the newer portion. Above all things B. is noted for its anct. buildings, these being famous both for their antiquity and for their beauty. The city is also noted for the magnificence of the palaces erected by a medieval nobility, and for the historic scenes that have been enacted within them. Its univ., claiming foundation in the early eleventh century, can certainly be regarded as the oldest law school in Europe. During the Middle Ages thousands of students flocked to it from all over Europe. Amongst its numerous famous students may be mentioned the poet Tasso. As a school of medicine it also rapidly became famous, claiming to have been the first medical school that dissected the human body. Its students now number nearly 13,000.

In addition to its univ. it has an academy of fine arts, a school of music, a library with over 400,000 vols., a museum of antiquity, and a botanic garden. In the Museo Civico is a valuable collection of prehistoric and Etruscan finds. Among the treasures of the picture gallery are masterpieces of the Bolognese school and Raphael's 'St. Cecilia.' Galvani was b. here. Its churches contribute much to its glory and magnificence. Amongst these churches may be mentioned the oldest, San Stefano, a group of 7 buildings of various dates, the oldest being of the fourth century, the building in present use of the tenth, San Domenico, the resting place of the saint who d. here in 1221; this church contains some of the work of Michelangelo. The largest church, S. Petronio, was begun in 1390, and never finished, but remains a magnificent example of Gothic architecture. The tn. has given numerous popes to the church and an extraordinary number of cardinals, altogether about 200. The present tn. is built on fairly modern lines; and is especially noted for the famous B. sausage, for its *tortellini*, and for its liqueurs, machinery, and books. It manufs. also paper, silks, and musical instruments. Historically it has had a somewhat changeable career. During the early period it was overrun by Lombards, but remained a part of the exarchate of Ravenna. It became a free and independent city in the twelfth century. It played an important part in the wars of the Ghibellines and Guelphs, and finally after many vicissitudes passed into the hands of the papacy. During the Napoleonic period it became the chief tn. of Napoleon's Cisalpine republic, and reverted to the papacy by the treaty of Vienna in 1815. Its inhab. were fervid supporters of the cause of United Italy, and in 1860 it became a part of the kingdom of Italy. It is still fortified, although since the First World War it has lost its importance as a fortress. In 1926 the largest stadium in Italy, with seats for 40,000 spectators, was opened. The inhab. are vivacious, industrious, fond of art and music, hospitable, and famous for their cookery. In the Second World War the Fifth Army began its final assault on Apr. 9, 1945, S. of B., and was on the outskirts of the city within 10 days. The Allies entered B. on Apr. 21, the Gers. fleeing across the Po before the victorious Fifth and Eighth Armies. (See ITALIAN FRONT, SECOND WORLD WAR, CAMPAIGNS ON.) The suburbs of the city suffered severely during the fighting in 1945, but the centre, with its medieval buildings, was little damaged. B. was for sev. months the crux of the Ger. line of resistance in the Second World War; yet on the whole it escaped serious damage and most of its collections of works of art had been removed to safety. The centre of the city, where are most of the chief monuments, was very lightly damaged. The most serious losses were the well-known anatomical theatre of the Palazzo Archiginnasio, which was totally destroyed, and the early Gothic church of

S. Francesco (built 1246-60), which sustained heavy but remediable damage. Other notable churches damaged include (La Santa) Corpus Domini, the main body of the edifice, façade, and nave roof being down; S. Giorgio; the oratory of St. Philip Neri; the convent of S. Giuseppe del Cappuccini; S. Maria della Mascarilla; and S. Salvatore. The Corso Theatre was severely damaged, as was the Archiginnasio, apart from its Anatomical Theatre, for the Doctors' and Agrarian Libraries were also destroyed. The Palazzo Monpensier and the Palazzo Malvezzi-Campeggi were also severely

to the rays of the sun it has phosphorescent qualities. This was one of the first observations of phosphorescence from inorganic matter. When this mineral is heated with charcoal it is reduced to barium sulphide.

Bolometer, an instrument used to measure small differences in temp. and based upon the phenomenon that heat imparted to a metal increases its resistance to electricity. It was invented in 1880 by Samuel P. Langley, an Amer. physicist, who sought a more efficient instrument than the thermopile. The B. consists of a thin strip of platinum foil



BOLOGNA

damaged and, on the outskirts of the city, the Villa Hercolani and the Villa Mazzacorati were practically destroyed. Pop. (1943) 280,000.

Bologna, **Giovanni da** (1524-1608), Flemish sculptor and architect, *b.* at Douai; studied at Rome. He went to Florence, and in 1558 was attached to the court of the Medici as sculptor. He married at Bologna, and then took the name by which he is known, G. B., having formerly been known as Jean Bologne. He is also known as Giann Bologna; whilst the Fr. call him Jean de Boudi. Among his numerous works may be mentioned 'Samson killing the Philistines'; 'Statues of the Rs. Nile, Ganges, and Euphrates'; 'Neptune and Four Sirens,' for the public fountain of Bologna; a bronze 'Mercury,' at Florence; the 'Rape of the Sabines,' also at Florence.

Bologna Stone, mineral originally found in clay near Bologna. It is one of the barytes group of minerals, and after being heated with charcoal and exposed

blackened with lamp-black and arranged to form one arm of a Wheatstone's bridge, while a strip of similar resistance constitutes the other arm. The blackened strip alone is exposed to the heat rays, and the slightest increase in temp. decreases its conductivity; the equilibrium of the bridge is therefore disturbed, and the extent of such disturbance is indicated by the deflection of the connected galvanometer. In order to attain great delicacy, the platinum strips are made exceedingly small in section, being some times $\frac{1}{16}$ in. wide and $\frac{1}{320}$ in. thick. With such an instrument the inventor discovered an extension of the infra-red rays of the spectrum which could not be detected by any other instrument. It has also been used to estimate the intensity of the energy of radiant heat. After being exposed to radiation for a measured time, the rays are cut off and the increase of current necessary to produce the same increase of temp. noted. The B. has also been employed in wireless

telegraph receiving apparatus. The platinum in this case is in the form of a loop of fine wire enclosed in an exhausted glass bulb after the manner of an electric incandescent lamp. Electric oscillations passing through the bulb increase the resistance of the wire and thus cause the galvanometer to deflect.

Bolor Tagh, a lofty ridge of mts. on the border of the Pamir plateau in Central Asia. The anct. kingdom of Bolor was once close to the B. T.

Bolsena, tn. and prov. of Viterbo, Italy. The tn. is situated on the N. shore of the lake of B. In anct. times it was known as Volsinii, and was a place of importance. Close to the tn. there are traces of one of the Etruscan cities; the chief of the ruins are those of a temple, and also an amphitheatre. Other relics of the past are to be found, some of which have been built into modern places. The campanile of S. Cristina was hit by a shell in the Second World War, and half of it crashed down, holing the church roof and damaging the W. end.

Bolsena, lake of Italy, upon which the tn. of B. stands. It is 10 m. long and 8 m. in width, and its basin is a volcanic hollow. Its shores are unhealthy, though beautiful in scenery. Martana and Bisentina are 2 is. which were often visited by Pope Leo X.

Bolshevism, term applied to the political and economic doctrine held by the Bolsheviks of Russia. During the last quarter of the nineteenth century Socialist doctrine began to spread in Russia, and socialist groups were formed in different parts of the country. A conference was held in London in July 1903, and was attended by delegates from these various groups. These delegates represented various sections of thought in the socialist creed and held different notions as to the manner of putting their opinions into practice. One section, led by Lenin, formed the extreme left of the Socialist party in Russia, who believed that their political and economic doctrines could best be trans. into fact by the destruction of the state as it then existed. This was to be achieved by the formation of a central committee consisting of a small group of theorists who would bring about the regeneration of Russia by the imposition of their doctrines from above by intensive propaganda and by force if necessary. The Lenin group prevailed at the London conference, and its adherents became known thereafter as Bolsheviks (men of the majority). The Mensheviks (men of the minority) disagreed with the Bolsheviks as to the manner in which the social revolution was to be brought about. Both were ardent Marxists, believing in the socialisation of the means of production and distribution, but the Mensheviks were in favour of mass penetration and persuasion. They held that the amelioration of Russia could be accomplished not by the destruction of the state, but by its use. It was of great assistance to the Bolshevik group that they were never in doubt as to what they wanted, and during the different crises of

the revolution they seemed to be the only party which pursued a path unmarked by hesitancy or deviation. Plekhanov, also an ardent disciple of Marx, was at this time associated with Lenin in the leadership of the Bolsheviks, but following the failure of the revolution of 1905 he went over to the Mensheviks, whose doctrines were in his view indicated by the revolution. The Bolsheviks, on the other hand, held that the revolution had failed because the more ruthless methods which they advocated had not been employed. The cleavage between the 2 groups became more apparent at a further conference held in London in 1907. The Mensheviks looked for their main support to the industrial workers, and the trade unionists in general sided with them. Lenin, however, wished to include the army and the peasants, together with the industrial workers, in an all-embracing revolutionary movement. The revolution of 1917, however, did not at once bring B. into prominence. It gave way before the success of the Socialist Revolutionaries, Kerensky's party, which was elected by universal suffrage in the elections held after the fall of Prince Lvov's provisional gov. on July 21. Army councils on the Soviet system had, however, been estab., and in these the Bolsheviks attempted to gain predominance. It is part of the doctrine of B. that the socialist state can only be estab. by revolution, which, to be successful, is not a matter of peaceful change, but must be violent and must have the mass of the people behind it. Revolution was seen in terms of class warfare, and power once gained by these means is consolidated by a dictatorship of the proletariat. This was the driving force behind the Nov. revolution, which brought the Bolsheviks into power and overthrew the Kerensky regime, already weakened by internal dissension. The tenets of B. were then put into practice. Universal suffrage was abolished and the vote was given to manual workers. They secured a majority in the provincial and national councils. The national council elected the executive committee, of which Lenin was made president. The Soviet Gov. was formed on Nov. 9, 1917. Its first measure was to end the war with Germany and to treat for peace (Dec. 14, 1917). On Jan. 18, 1918, the Constituent Assembly, in which the party of the Socialist Revolutionaries had outnumbered the Bolsheviks, was dissolved by force. The factories were handed over to the workers. The trade unionists had sided generally with the Mensheviks against the Bolsheviks and the first strikes against the new gov. were for the recall of managers and experts. Strikes were declared illegal under the pretext that the people had now its own gov. Banks were abolished and all possessions were declared to be national property. Church property was confiscated with the rest. B. was hostile to religion, which was regarded as one of the means whereby a capitalist society kept the people in a state of suppression. By 1921 the Soviet Gov. had estab. itself in the

face of all opposition, and the hist. of B. merges with that of Russia itself. It was now the aim of Lenin and his associates to restore order in some measure out of the economic chaos which prevailed, and the New Economic Policy (N.E.P.) was launched on Mar. 15, 1921. It retained Communism as the principle of gov., but with modifications. The peasants were allowed to sell their products, after paying a heavy tax in kind. Factories were handed over to trusts or individuals and private trade was permitted under a licence. One further aspect of B. must be noted. This is the belief that the revolution of the masses is a world movement, and that class warfare, aiming at a dictatorship of the proletariat as a means towards Communism, is to be fostered in every country and directed by a Central Communist International. This doctrine was at variance with the N.E.P., and the growth of Russian national interests. See also COMMUNISM; RUSSIA; SOVIET SYSTEM. See H. J. Laski, *Communism, 1881-1927*, 1927; J. Stalin, *Problems of Leninism* (trans.), 1928; L. Trotsky, *History of the Russian Revolution, 1917-22*; W. H. Chamberlain, *The Russian Revolution, 1917-22*; B. Pares, *A History of Russia*, 1947.

Bolsover, tn. in Derbyshire, England, 6 m. E. from Chesterfield, and situated upon a ridge of the Pennines. There are coal mines in the neighbourhood, also quarries of limestone. B. Castle, which is well preserved, is a very anct. structure built in the eleventh century. Pop. 12,000.

Bolsover Stone, name given to the yellow limestone found at Bolsover in Derbyshire. It was selected for its strength, durability, and colour for the construction of the Houses of Parliament.

Bolsward, tn. in Friesland, Netherlands. It is situated at the junction of many canals. It trades in dairy produce and cattle, and is noted for the manuf. of worsted. There are shipbuilding yards, brickyards, and potteries.

Bolswert, Shelte a (1686-1659), Dutch engraver, b. at Bolsward, lived at Antwerp. His prints after Vandyck and Rubens are faithful reproductions of the originals, and he also engraved the works of Seghers, Jordaens, Quellin, Diepenbeek, and Rombouts. Vandyck's 'Crucifixion' is one of his best productions.

Bolt: 1. From Old Eng. *bolt*, a word of unknown origin signifying a cross-bow B.; hence a metal or wooden pin with a knob to it, as the B. of a door. In time any stout pin came to bear this name, and Bs. are of many kinds, used in fastening together structures of wood and metal, as ships, bridges, machinery. The short heavy 'quarrel' of a cross-bow and the 'long-shot' of a cannon were both Bs.; also a roll of textile material, e.g. a B. of cotton sheeting. A bundle of reeds or osiers bears the same name. A prisoner's shackles were thus called, as in *Measure for Measure*, 'Lay bolts enough upon him.' From the cross-bow missile we get the metaphorical idea of something striking suddenly and swiftly, as 'a

thunderbolt,' 'a bolt from the blue,' and the noun suggests a verb, 'to bolt,' meaning to rush suddenly, as 'the horse bolted.' In farming, a crop that runs to seed prematurely is said to B. 2. Sometimes spelt *boult*, from Old Fr. *buleter* or *bureter* (low Lat. *burra*, a coarse kind of cloth, cf. It. *buratto*, a meal-sieve), a frame covered with a net of fine material for sifting the flour from the bran. From this comes the verb 'to bolt,' meaning to sift out. Burke says, 'This must be bolted to the bran,' i.e. closely reasoned out to distinguish true from false. And in Milton's *Comus*, 'I hate when Vice can bolt her arguments.'

Boltonia, genus of tunicates found in Australasia, the Arctic and N. Atlantic. It belongs to the order Ascidacea and family Cynthiidae. The species, which include *B. ovifera*, *B. fusiformis*, *B. reniformis*, and *B. globifera*, remain fixed to rocks and stones by the long stalk of the body, and show few signs of life.

Bolt Head, a cape on the S. coast of Devonshire, W. of the estuary of the Salcombe R. It is 400 ft. high, and was acquired in 1928 by the National Trust. It has a wireless station.

Bolthead, or receiver, or matraass, a glass vessel used in chemical distillations. It is long in shape, with a straight neck.

Bolton, municipal and parl. bor. in S. Lancashire. It is situated on the R. Croal, and is 10 m. from Manchester and 200 from London. Has an area of 15,279 ac. With a pop. estimated at 160,000 B. ranks as the fourth largest tn. in Lancashire, coming next to Liverpool, Manchester, and Salford in size and importance; and its position on the fringe of a great range of open country and moorlands, is conducive to the health of the inhab., and for an industrial tn. is to be envied. B. is the centre of the fine-cotton industry, but in addition has a diversity of other trades, including general and machine engineering, constructional engineering, and leather tanning works. The textile industry is foremost and comprises cotton-spinning and weaving, the manuf. of artificial silk goods, and bleaching, dyeing, and finishing. B. is full of historic interest. Arkwright lived and worked in Bolton; later in 1779 Samuel Crompton invented the spinning mule, which revolutionised the spinning industry. Crompton's home, Hall 1th Wood, a fine example of late fifteenth- and sixteenth-century architecture, was presented to the tn. in 1889 by the first Viscount Leverhulme, and is now open as a museum. B. possesses over 500 ac. of parks and recreation grounds, and many other places of interest, notable amongst these being the tn. hall and civic centre, the technical college—one of the finest technical colleges in the country—the B. school—one of the most modern and best equipped public schools in the N.—Smithills Hall, Deane church, and the old 'Man and Scythe' inn. B. returns 2 members to parliament. There are 3 papers pub. in B., 1 evening and 2 weekly.

Bolton, Duke of, an Eng. title held by the Powlett family from 1689 to 1794.

It was first conferred upon Charles Powlett (or Paulet), marquess of Winchester, in recognition of his services in effecting the revolution of 1689. The title became extinct after the death of the sixth duke in 1794.

Bolton, Sir Francis John (1831-87), Eng. soldier and electrician. He enlisted in the Royal Artillery, and became captain of the 12th Foot Regiment, 1860. With Colomb he developed a system of visual signalling, also inventing oxy-calcium light for night-signalling. With Colomb and an officer of the Royal Engineers he compiled the *Army and Navy Signal Book*, used in Abyssinian campaign, 1867. One of the founders of the Society of Telegraph Engineers and Electricians, 1871. Wrote *London Water-supply*, 1884; *Description of the Illuminated Fountain and of the Water Pavilion*.

Bolton, Sir Richard (c. 1570-1684), Eng. lawyer, practised as a barrister in England and Ireland; in 1604 became recorder of Dublin. In 1621 he pub. *Statutes of Ireland* (from Edward II. to James I.); chief baron of Irish exchequer, 1625; 1639, became chancellor of Ireland. He was one of Strafford's chief advisers on introducing arbitrary gov. In 1643-1644 he was chief counsellor of Ormonde, negotiating for cessation of hostilities between Eng. and Irish, and in 1646 he signed the proclamation of a treaty of peace between Charles I. and his Irish Rom. Catholic subjects. See *Contemporary History of Affairs in Ireland*, 1641-52, 1879; *Carte's Life of Ormonde*, 1736; *Carte MSS.*, Bodleian Library, Oxford.

Bolton Abbey, priory situated on the banks of the Wharfe R., in the W. Riding of Yorkshire, England. It was founded in 1121 by William de Meschines and Cicely de Romili, his wife, for the order of St. Augustine, about 2 m. from its present site. The date of its removal is uncertain, but it was dissolved in 1540. A portion of the nave has been used as a par. church, but the tower and a very fine E. window are practically all that is left of the building. The ruins are so hidden in woods that they are not noticed until the visitor is very close. The surrounding scenery is most beautiful. Wordsworth founded his poem *The White Doe of Rylstone* upon a legend connected with the old abbey.

Bolton-upon-Dearne, urb. dist. of the W. Riding of Yorkshire, England. It is situated on the Dearne, 7 m. N.E. of Rotherham. Pop. 14,000.

Boltraffio, Giovanni (1467-1516), It. painter and a scholar of Leonardo da Vinci. Came of a distinguished Milanese family, and for most of his life occupied various civic offices in Milan. Girolamo Casio, early in B.'s artistic career, was closely associated with B., as his portrait in the Brera Gallery (Milan) and his 'Madonna' in the Louvre show. The Brit. National Gallery has sev. works of B., notably a Madonna and Child, painted by Morelli to be B.'s best painting. There are a number of fresco medallions of holy women by B. in the

nuns' choir of S. Maurizio, Milan. *Consult Vasari, Lives of the Painters, Sculptors, and Architects* (Everyman's Library); H. Grimm, *Life of Michael Angelo* (trans. by F. E. Bunnnett), vol. 1, 1896.

Bolus, a round mass of substance with medicinal qualities. It is soft and larger than a pill, though it is intended to be swallowed in the same way.

Bolzano (formerly **Boizen**), city of Venezia Tridentina, Italy, situated on the Brenner railway. It is an old tn. and, like so many It. tns., noted for its monuments, churches, and palaces. Lying on a vital strategic railway it suffered severe damage in the Second World War, not only to its individual monuments, but to its general character by defacement of external frescoes, high-pitched roofs, and carved stone-work. The cathedral was badly wrecked by direct hits, but the building is, in the main, restorable. The old par. church of S. Niccolo was destroyed, as also was the Dominican church, while the Cappuccini Monastery was badly damaged. Pop. 47,000.

Boma, tn. of the Belgian Congo State; formerly the cap. It is situated on the r. b. of the It. Congo, at about 40 m. from its mouth. It was originally named Lombi, or Embomma. The harbour is formed by the ls. of Nkete, and the riv. bank, and is a m. wide. It exports ivory, gum, rubber, nuts, and palm oil. It has an airport. Pop. 6000 (of which about 500 are white).

Bomarsund, vil. on Åland Is., now part of the republic of Finland. Formerly under Russian rule, it was the site of a fortress commanding the gulf of Bothnia. It was taken by the Fr. and Eng. on Aug. 16, 1854, who destroyed it after a bombardment lasting a week. The treaty of Paris bound the Russians not to rebuild it, and the Finnish Republic is also under obligation to demilitarise the zone by treaty with Russia (1940).

Bomb (in warfare), originally a hollow ball or 'shell' filled with explosive and projected from special types of artillery; the term was also applied to an explosive missile or grenade (q.v.) thrown by hand, and also to any device deposited in a place where it would destroy life or property by means of an explosion. In recent times the word has been used with these meanings, and also as a general term for projectiles dropped from aeroplanes, whether designed to produce destruction by explosion, by fire, or by poison gas. With the advent of the pilotless aeroplane carrying a charge of high explosive which as detonated as the aircraft dives and collides with its target, the word has received a natural extension of its meaning, and such weapons are called flying Bs. Still other Bs. are launched and propelled by rocket action.

Aerial Bs. consist of a container or case filled with high explosive, an incendiary mixture, or poison gas, and some means of detonating, igniting, or discharging the filling. *High-explosive Bs.* resemble shells in being filled with T.N.T. (trinitrotoluene) or lyddite (trinitrophenol). Bs.

are usually stream-lined, and tail fins are provided to increase their stability and accuracy in falling, causing the B. to rotate while falling, the end of the percussion cap remaining downmost. High-explosive Bs. for use against warships or land targets that are strongly protected by reinforced concrete, etc., may have a heavy case designed to penetrate the protective structure, so that the explosion occurs inside. These are fitted with a fuse with a slight delay action, and to be effective they must either be dropped from a great height, with a consequent loss of accuracy, or their penetrating power must be increased by a rocket propulsion unit fitted in their tails. Rocket-propelled Bs. of smaller size have also been used extensively for attacking tanks and other vehicles, whose movements make them a difficult target for Bs. dropped in the usual way. For use against tns. and factories Bs. need not have high penetrating power, and their cases are made comparatively light so that a larger weight of explosive can be used. The damage caused to buildings by high-explosive Bs. is largely the result of blast (high-pressure atmospheric waves) and of earth tremors similar in nature to those of earthquakes. Since the total B. load of an aeroplane is higher if it carries a few large Bs. rather than a larger number of small ones, there has been a tendency for larger and larger Bs. to be used, the largest size being limited by the lifting capacity of the aeroplane. Thus, although few Bs. heavier than 1000 lb. were used before 1941, 20,000-lb. Bs. were dropped for special purposes a few years later (see BLOCK-BUSTER). *Incendiary Bs.* are usually small, as the object is to produce simultaneously a larger number of fires than can be dealt with by the defence organisation. Some incendiary Bs. are made of magnesium, which, being a solid metal, requires no external case. The fillings of incendiary Bs. usually consist of thermit (a mixture of aluminium powder and iron oxide), which evolves enormous heat when ignited. Oil is sometimes added in order to widen the conflagration, the action of thermit being localised. An incendiary mixture and high-explosive may be combined in the same B. *Petrol Bs.* are used to fire easily inflammable objectives, such as forests, wooden buildings, or ripe crops. *Smoke Bs.*, intended to produce dense screens of smoke, contain phosphorus, stannic chloride, fuming sulphuric acid, chlorosulphonic acid, or a mixture of zinc dust and carbon tetrachloride. *Atomic Bs.* (q.v.), although not particularly large, create extraordinarily powerful blast effects. They also act as incendiaries over a wide area because of the heat radiated, and endanger life both for these reasons and because they produce burns by direct radiation. The radioactive materials released by them may also be highly dangerous.

Although the aerial B. was of relatively minor importance in the war of 1914-18, it proved one of the decisive weapons 25 years later. The Allies dropped in the

European theatre of operations nearly 1,400,000 tons of Bs. in 1944 alone, and the havoc produced by their sustained bombing offensive was a major cause of the Ger. collapse in the following year, while the Jap. surrender a few months later was precipitated by the first use of atomic Bs.

Bomb, in geology, the name applied to a round mass of lava ejected from the crater of a volcano.

Bombaceæ, order of dicotyledonous plants consisting of large trees which are found most commonly in America. The flowers are hermaphrodite, have 5 joined sepals, 5 free petals, 5 or more stamens either free or joined to form a tube, 2 to 5 superior joined carpels, which are multi-locular, and contain 2 or more ovules in each loculus. The fruit often contains hairs which form a cottony substance, but are too short to be made into linen. Two of the chief genera are Bombax and Adansonia, or the Baobab.

Bombala, tn. of Wellesley co., in New S. Wales, Australia, 320 m. S.W. of Sydney. Pop. 1500.

Bombard, cannon, introduced before the fifteenth century, which could throw stone balls from 250 to 500 lb. in weight. The Bs. were breech-loaders, thick, and with a wide aperture, sometimes made of wrought-iron bars, looped together. Such a one was 'Mons Meg,' used at the siege of Dumbarton, 1489.

Bombardier, non-commissioned officer in the Royal Artillery, corresponding to corporal in the line regiments. The title has now no special implication, though the rank is still equivalent to that of corporal. The name owes its origin to the bombard (q.v.). A man employed in looking after bombards, howitzers, mortars, etc., was known as a bombardier.

Bombardier Beetle, popular name of sev. species of coleopterous insects of the family Carabidæ. They obtain their name from the fact that they can emit explosively from their bodies, when alarmed, a pungent acid fluid. A report follows the discharge, and the fluid instantly evaporates. *Brachinus crepitans* is the commonest Brit. species and occurs in chalky districts.

Bombardment, attack upon a fort, tn., fortress, etc., by means of continuous artillery fire. A B. consists historically in a continuous attack on the buildings and undefended portions of a tn. in order to harass the civil pop., and so bring pressure to bear upon the governor or commandant of the tn. to induce him to surrender. A B. used in order to produce psychological pressure on the inhab. was, even before the war of 1914-18, condemned as immoral. The Hague Convention Law of War (1907) laid down the following articles in connection with B.: Art. 25. The attack or B., by whatever means, of tns., vils., dwellings, or buildings, which are undefended, is prohibited. Art. 26. The officer in command of the attacking force must, before commencing a B., except in cases of assault, do all in his power to warn the authorities. Art. 27.

In sieges and Bs. all necessary steps must be taken to spare, as far as possible, buildings dedicated to religion, art, science, or charitable purposes, historic monuments, hospitals, and places where the sick and wounded are collected, provided they are not being used at the time for military purposes. It is the duty of the besieged to indicate the presence of such buildings or places by distinctive signs, which shall be notified to the enemy beforehand. Art. 28. The pillage of a tn. or place even when taken by assault is prohibited. An open tn. is liable to be bombarded if it is in any way defended, or if the exigencies of military necessity demand it, i.e. if it can in any way be used by the enemy as a point of vantage. The main reason for a B. has already been given as a means of inducing the civil pop. to bring influence to bear which will lead to the ultimate surrender of the tn., but this has been proved to be not always successful. The case of the siege of Strasbourg may be quoted as a case in point. The B. of a fort. tn. does not of a necessity mean only the B. of the fortifications. The commandant of a bombarding force has the right to range his guns over the whole of the city, saving always those buildings which are mentioned in Art. 27. Notable historical Bs. are those of Sebastopol, Strasbourg, Paris, Soissons, and Verdun. Strasbourg may be taken as the outstanding pre-1914 example of a tn. that underwent a terrific B., as the tn. was bombarded continually day and night. Later, when siege operations began, the fortifications were shelled all day, and the tn. itself all night. When the surrender took place nearly 800 houses had been destroyed, considerably more than half of the total number of houses were injured more or less severely, 2000 of the civil inhab. killed, and over 10,000 made homeless. Many differences of opinion have been expressed on Art. 26, some authorities holding that B. should not begin until ample warning had been given the inhab., others that a besieged or threatened tn. should be prepared for B. at any time without notice. During the First World War, Bs. were normally directed against entrenched positions in the open. The high degree of skill attained in defending a position with obstacles, such as bomb-proof emplacements for guns and machine-guns, and the enormous increase in the proportion of the artillery necessitated B. to reduce the enemy's means of resistance. B. sometimes lasted for a few hrs., and sometimes for days, according to the strength of the position to be attacked or action it intended the enemy to take. As surprise is the important element, a B. of more than a few min. is seldom advisable in open warfare. After the initial blow has been struck and the value of that element decreases, B. may be fully employed. The nature of the shell to be used depends upon the nature of the destruction in view, e.g. whether houses, forts, barbed wire, guns, transport, troops, etc. B. of tns. from aircraft was first employed by the Gers., to which the Allies retaliated.

Aerial Bombardment is covered by Art. 25 of the Hague Regulations (*supra*). The words 'by any means whatever' were added by the Second Hague Conference so as to cover B. by aircraft. None the less, it was held by some jurists that, by analogy with naval B., railway junctions, munition factories, and the like might be bombarded from the air though situated in undefended places. All belligerents resorted to such Bs. during the 1914-18 war, and still more was it the practice in the Second World War. Yet the question of law is still controversial.

In 1923, arising out of the Washington Conference on the limitation of armament of 1922, a proposed code of air warfare rules was produced. The prin. were as follows: Aerial B. for the purpose of terrorising the civilian pop., of destroying or damaging private property not of military character, or of injuring non-combatants, is prohibited; aerial B. for the purpose of enforcing compliance with requisitions in kind or payment of contributions in money is prohibited; aerial B. is legitimate only when directed at a military objective, i.e. an object of which the destruction or injury would constitute a distinct military advantage to the belligerent; and such B. is legitimate only when directed exclusively at military forces, military works, military establishments or depots, factories constituting important and well-known centres engaged in the manuf. of arms, ammunition, or distinctively military supplies; and lines of communication or transportation for military purposes. The B. of cities, tns., vils., dwellings, or buildings not in the immediate neighbourhood of the operations of land forces is prohibited. In cases where the objectives specified above are so situated that they cannot be bombarded without the indiscriminate B. of the civilian pop., the aircraft must abstain from B. In the immediate neighbourhood of the operations of land forces, the B. of cities, tns., vils., etc., is legitimate provided there is a reasonable presumption that the military concentration is important enough to justify such B., having regard to the danger this may cause to the civilian pop. A belligerent state is liable to pay compensation for injuries to person or to property caused by the violation by any of its officers or forces of these provisions. In short, these clauses substitute the test of military objectives for the obsolete distinction between defended and undefended places. In the resolution adopted by the general commission of the Disarmament Conference in July 1932 it was laid down that 'air attack against the civilian pop. shall be absolutely prohibited.' Yet the fact that neither this resolution nor the Hague Rules of 1923 have become part of international law does not mean that the matter is not governed by existing principles of law. For the immunity of non-combatants from direct attack is one of the fundamental rules of the international law of war, and it is a rule which applies with absolute cogency alike to

warfare on land, at sea, and in the air. In the 1914-18 war the illegality, except by way of reprisals, of aerial B. directed exclusively against the civilian pop. for the purpose of terrorisation or otherwise, seems to have been generally admitted by the belligerents. But this fact did not actually prevent attacks on centres of civilian pop. in the form of reprisals or of attack against military objectives situated therein. But in the ensuing world war the application of this principle of the law of war to air warfare was soon threatened by reason of the enlargement of the scope of and the changes in the character of modern total war which tends to obliterate the distinction between combatants and non-combatants; the resulting difficulty of determining what constitutes a military objective, and the technical difficulty of confining the effect of hostile air action to the intended or professed object of attack. See AERIAL WARFARE; AIR RAIDS.

Bombardon, an obsolete musical wind instrument of the shawm family, much like a bassoon, and used as a bass to the hautboy (oboe). The name is now used as a synonym for the bass tuba.

Bombax, genus of Bombacæ growing in tropical countries. It consists of large trees with a soft spongy wood frequently used for making canoes. *B. ceiba*, common silk-cotton tree, a native of W. Indies and S. America, reaches a height of 100 ft. The down in the seed-vessel is made into hats and bonnets, and is used for stuffing chairs and pillows. *B. malabaricum*, the cotton-tree of Ceylon and India, sheds its leaves in Dec. and flowers during the month it is leafless. *B. pubescens* attains a height of 20 to 30 ft., and in Brazil its tough bark is used in rope-making.

Bombay, prov. of India, situated on the W. coast and bounded in the N. by Sind and Rajputana, in the E. by Central Provs. and Hyderabad, and in the S. by Madras and Mysore. The area of the prov., which is autonomous, is 76,443 sq. m., with a pop. of 20,850,000, of which 76 per cent are Hindus and 20 per cent are Muslims. The prov. is divided in 4 administrative divs.: (1) Bombay City, (2) the N. or Gujarat, (3) the Central or Deccan, (4) the S. or Carnatic. Within these divs. there are 19 dists., in addition to the municipal corporation of B. city. Situated within the boundaries of the prov. are a number of Indian states, which were formerly under the supervision of the governor of B., but are now controlled by the gov. of India direct. They are divided historically and geographically into 2 parts: (1) the N. or Gujarat group includes Baroda and other administrative divs. of Cutch, Palanpur, Rewa Kantha, and Mahi Kantha. (2) The S. or Mahratta group includes Kolhapur, Akalkot, Savantwari, and the Satara and Mahratta Jagirs. The surface of the prov. is very rugged on the whole. The great plateau of the Deccan stretches southward from the Vindhya, and is buttressed by the W. and E. Ghats. The chief mt. ranges are the W. Ghats, stretching all along the coast-line, the Vindhya Mts. in the N.E.,

and S. of these the Satpura Hills. The N.W. portion is flat. The chief rivs. are the Tapi and Nerbudda, flowing into the gulf of Cambay, and the Luni flowing into the gulf of Cutch. The S. portion of B. is watered by the tribs. of the Kistna and Godavari. The climate is remarkable for its great varieties. In Cutch and Gujarat the heat, though less, is very great. The table-land of the Deccan has on the whole an agreeable climate, except in the hot month. The same applies in the Mahratta country. B. is, though cooled by the sea-breezes, is oppressively hot in May and Oct.

Agriculture.—Joar and bajra are the staple food-grains in the Deccan and in Khandesh. Wheat is also largely grown throughout the presidency, and especially in Gujarat. Barley is also grown. The prin. oil seeds are til, mustard, castor oil, safflower, and linseed, and the chief fibres are Deccan hemp and cotton. In B. the ryotwari system prevails, by which the ryots, or peasant proprietors, receive their holdings from the gov. The value of the ann. product of each field is assessed by the Survey Dept., which, after making various allowances, fixes half the net profits as the share of the gov. The gov. is attempting to stimulate agric. improvement by organising co-operative societies. One object of this is to overcome agric. stagnation, which comes from lack of capital among the ryots. Credit societies have also been satisfactorily estab. in B., and in addition there are over 250 non-credit co-operative societies with 40,000 members.

Industries.—The prin. manuf. is cotton, and the cotton mills of B. is. and Ahmedabad are constantly extending. Three-quarters of the output of the whole of India comes from B. The number of looms in B. is. is over 65,000, and in the rest of the prov. about 73,000, and the number of operatives in all industries over 480,000. Half the mills are driven by electricity from hydro-electric works, the first of which was opened in 1915. Labour in B. was once comparatively cheap, but a succession of strikes among cotton operatives at intervals from the year 1916 has made for shorter hrs. and increased wages. The export of piece goods showed an average of about 90,000,000 yds. before the First World War, and 10 years after the end of the war the export had risen to 167,000,000 yds. After a further decade (1937-38) the production of the cotton mills was 11,161,000,000 lb. of yarn and 864,000,000 lb. of woven goods.

The industrialisation of B. has progressed since the 1914-18 war. Special attention has been given not only to the weaving, tanning, glass, and sugar industries, but also to the chemical and engineering industries. Experiments have also aided a number of minor industries; wood distillation, calico printing, fishing, pottery, and oil crushing. There are upwards of 30 chemical industries in the prov. Ahmedabad is a centre for artistic craft and wood carving. Salt is obtained from the gov. works at Karaghoda and Udu.

Education.—A univ. was estab. in 1857, consisting of a chancellor and vice-chancellor and fellows. Since 1918 sev. institutes for technical, professional, and commercial teaching have been affiliated to the univ. Educational improvements were demanded in 1917 when political reform was under discussion. State education was checked by the non-co-operative movement after 1918, but there are now sev. institutions giving technical training, among which in B. city is the Victoria Technical Institute. There are over 800 secondary schools and some 20,000 primary schools. Education in the presidency is under a director of public instruction, who is responsible to the administration.

Languages.—In the S. are the Marathi and Kanarese, and Gujarati in the N.W. B. obtained only a part of Maharashtra in 1818, and only about one-fifth of its Hindu pop. are Marathas now. Then, as now, large sections of them spoke Gujarati and Kanarese, and also Sindi among those in Sind, now a separate prov.

Religious Communities.—Hindus, other than scheduled castes, number some 14,700,000, and those of the scheduled castes 1,855,000. Of the remainder the Moslems are the largest community, with nearly 2,000,000. Christians number 375,000, and Sikhs 8000. Other communities are the Parsis (89,000), descendants of anct. Persian fire-worshippers, and the Borahs, sprung from early converts to Islam. Both are remarkable for their commercial activity and enterprise.

Cities and Communications.—There are over 2500 m. of railroad (excluding Indian states). The chief railway systems are the B., Baroda, and Central India, with the lines worked by it to the N., and the Great Indian Peninsula (with the Indian Midland) eastwards; S.-eastwards is the Madras and S. Mahratta system. There are also over 10,000 m. of metalled and 10,000 m. of unmetalled roads. The chief cities are B. city (*q.v.*), pop. 1,500,000; Ahmedabad 591,000; Poona 258,000; Sholapur 213,000; Surat 140,000.

Administration.—Up to 1947 B. was an autonomous prov., administered by a governor assisted by a council of 7 ministers. There were 2 legislative bodies: (1) the Legislative Council, consisting of 29-30 members, of which 3 or 4 were chosen by the governor, the remainder being elected; and (2) the Legislative Assembly, consisting of 175 elected members. Administration of justice was conducted by a High Court at B., consisting of the chief justice and 7 puisne judges, together with dist. and assistant judges throughout the dists. of the presidency.

Historical.—The is. of B. was visited by the Portuguese in 1509 and acquired by them in 1530. It was given to Charles II. as the marriage portion of the Infanta Catherine of Portugal, 1662. In 1668 it was granted to the E. India Company. The grant was confirmed by William III. in 1689, and the prov. was placed under the governorship of the president of the

Brit. factory at Surat, which had been in existence since 1616 on a lease obtained from the emperor Jehangir. In 1708 the seat of gov. was transferred from Surat to B. city. Much of the present ter. of the prov. was annexed from the Mahrattas. Sind was added in 1843 in the only war in the annals of the Brit. Raj which cannot be regarded as in some sense or in some degree defensive (Coupland), and, as it was, it led to the recall of the governor-general, Ellenborough. Up to 1813 the sovereignty of the Brit. Crown was recognised only in the is. of Bombay. By an Act of 1773 B. (like Madras) was made subordinate to Bengal in matters of war and peace, but was otherwise virtually independent. Then by an Act of 1833 legislative authority was reserved to the central gov., but the Act of 1861 restored the legislative function to B. (and Madras). In 1896 B. G. Tilak was the first to preach in W. India the doctrine that Brit. rule was an unqualified and unscrupulous tyranny. In his paper *Kesari* (Lion) he fomented the prevalent unrest provoked by the drastic measures taken by the gov. to check the spread of a bubonic plague, with the result that a week later the plague commissioner and another Brit. officer were assassinated. In the provincial elections of 1935 Congress won nearly half the seats in B., whereas in Bengal, Assam, and Sind, among other provs., no party obtained a clear majority, so that coalition govts. were formed. B. was thus one of the 7 so-called 'Congress provs.' (*see further under INDIA*), but despite the Congress triumph at the polls there were serious political disturbances in B. in 1936. B. was at this time ruled as a presidency by a governor as president of a council consisting of 2 ordinary members appointed by the Crown. In 1936 Sind was separated from the presidency, and on Apr. 1, 1937, the presidency was constituted an autonomous prov. In Nov. 1939 the council of ministers resigned, and the governor suspended the legislature temporarily, assuming the necessary powers to continue the administration until the Independence of India Act, 1947, when B. became a part of the dominion of India.

Bombay City, cap. of the prov. of B., situated on a small is. which is connected with the mainland by an artificial causeway. It is the largest and safest harbour in India, and the most important. About 40 per cent of the total imports and exports of the whole of India pass through B. It occupies the best position for commerce in the whole of Asia, and after the opening of the Suez Canal, it rapidly surpassed Calcutta in its trade. The large and beautiful harbour (14 m. by 5 m.) is defended by numerous batteries armed with up-to-date guns, and contains 3 docks and a large dry dock. The Alexandra (50 ac.) is the largest dock in India. It has 3 docks, well equipped, and a large dry dock. The Great Indian Peninsula railway and the Bombay, Baroda, and Central Indian railway both have their termini in the city and link it up with other commercial cities of India.

The first railway was opened in 1853. At Malabar Point is Gov. House. Between the Malabar and Comballa Hills rise the 5 towers of silence, where the Parsees deposit their dead. It was the Amer. war of 1861-65 that made the fortune of B., for it then became the chief cotton mart of the globe. The name is a contraction of Bom Bahia, the Portuguese for good bay. B., owing to its geographical position as a base for the military operations in Mesopotamia was very much affected by the First World War, but the result upon industry was beneficial.

Brit. Empire, 3 directors of the Reserve Bank of India, and G. D. Birla, the chief supporter of the Congress party in the Indian business world. It was designed as an answer to the vital economic problem presented by the results of the census of 1941, which showed that nearly 5,000,000 more births were occurring every year than deaths. The objective of the proposals was 'to bring about a doubling of the present *per capita* income within a period of 15 years.' Allowing for the growth of pop., that would mean trebling the aggregate national income,



A STREET IN BOMBAY

Canadian Pacific

Sanitary conditions in B. are bad, and it is the breeding-place for smallpox and cholera. Attempts to deal with the housing problem are being made, but congestion is so great that the average density is 250 persons per ac., while in some places it is as much as 700 per ac. The total pop. is 1,500,000.

Bombay Duck, or *Bummal* (*Harpodon nchercus*), marine, pike-like fish of the family Scopelidae. It is captured in the Indian and China seas and exported from Bombay in a preserved state.

Bombay Plan, the popular name for the proposals advanced in *A Plan of Economic Development for India*, pub. early in 1944. It was the joint production of 8 eminent industrialists and financiers, including sev. members of the famous Tata firm, which now produces more steel and iron than any other firm in any part of the

and, to achieve this increase, the plan proposed to raise the net agric. output to a little over twice its present output, and the output of industry to approximately fivefold. To finance this bold scheme, which covered the extension of social services as well as the improvement of agriculture and the expansion of industry, the cap. to be raised would be about £7,500,000,000. The viceroy, Lord Wavell, without accepting the proposals in detail, welcomed the plan as aiming at the same goal as the gov.

Bombazine, material of which the warp is silk and the weft wool, though there is an inferior quality made of wool and cotton. The stuff is of fine texture, and is used in making the robes of some religious orders. Its manuf. was first introduced into England by the Dutch.

Bombelli, Raffaello, It. mathematician

of the sixteenth century, b. at Bologna, and patronised by a bishop of Melfi. His main work is a *Treatise on Algebra*, 1572, in 3 books, the last being a set of problems. A hist. of algebra is prefixed to the works, in which the invention of the science is attributed to the Hindus.

Bomber, an aeroplane designed to carry and release bombs and, in the case of fighter-Bs., to attack other machines as well. The B. carries an armament of guns, but these are provided essentially for defence. Germany concentrated on Bs. in the period immediately preceding the 1939-45 war, Britain on fighters. There were about a dozen types of Ger. aircraft as against some 50 Brit. types; but the Ger. Air Force made up in numbers what it lacked in variety. Germany had had experience of B. construction in the previous world war. The big Ger. B. of 1917 was the twin-pusher, *Gotha*. It had 6-cylinder water-cooled engines and 3 guns, and survived until 1938. The Junkers 52/3 mks. was the Luftwaffe's first heavy B. The Ger. dive-B. was a development of the Junkers K47 experimental machines which were built in Sweden when the manuf. of war planes was prohibited in Germany. The Henschel Hs. 123 was the first dive-B. built in Germany. It had a radial B.M.W. engine, and carried an aft gun. In the early stages of the Second World War the chief Ger. Bs. were Dornier 17 (9 tons, crew of 4, 3 guns, 275 m.p.h., and range of 750 m.); Heinkel III. (11 tons, crew of 4, 3 guns, 275 m.p.h., and 2410 m. range); and Junkers 88 (12 tons, crew of 4, 3-6 guns, 310 m.p.h., and range of 630-3000 m.). The standard B. of the Luftwaffe through most of the war until the end of 1943 was the Heinkel III. In its later development it carried a crew of 6, had maximum speed of 274 m.p.h., and had an armament of 7.9-mm. flexibly mounted machine-guns. The Focke-Wulf 190 A3, a notorious machine for its use as a sneak raider B. or night fighter in the direct defence of Germany, was the first aircraft that the Gers. produced for defence and hence it was the first step in their defeat. The chief Brit. types in the early stages of the Second World War were Fairey Battle (5 tons, crew of 2 or 3 and 2 or 3 guns, 257 m.p.h., and range up to 1400 m.); Blenheim IV. (7 tons, crew 3, guns 2, 295 m.p.h., and 1950 m. range); Wellington (11 tons, crew 5, guns 5, 265 m.p.h., and 1940 m. range); Whitley IV. (12 tons, crew 4, guns 5, 245 m.p.h., and 1940 m. range); and Hampden (9 tons, crew 4, guns 4-6, 265 m.p.h., and range over 1700). From the outbreak of the war in 1939 until the middle of 1941 it was the Bs. constructed before the war that were the chief instruments of attack on Germany—mainly Blenheims, Hampdens, Wellingtons, and Whitleys. The larger aircraft, Halifax, Manchester, Stirling, and Boeing Flying Fortresses and others, entered the war only at the end of this period. The Brit. policy of giving priority to the creation and training of a strong fighter force was justified, for the fighters fought and won the battle of

Britain. The B. force, if in numbers then far from equal to that of Germany, was compact, and it had been trained to carry out raids in daylight as well as by night. The training was, however, only carried out with difficulty, for the Wellingtons, Whitleys, and Hampdens were still comparatively untried. Before their appearance the men of B. Command had been flying far less powerful aircraft, such as the Handley Page Harrow, Hawker Hind, and Vickers Wellesley. These carried a crew of 2 or, at the most, 3, and this meant that most of the responsibility during flight fell on the pilot. With the bigger aircraft carrying crews of 4 to 6 the necessity for closer team work soon became evident, and a further stage in training B. crews, known as operational training, was introduced. With a team, the captain and second pilot do the actual flying; the observer navigates and drops the bombs; the wireless operator helps the navigator and, with the air gunner, does the fighting. The B. pilot's training and environment are different from those of a fighter pilot. The latter is in action for only a relative short period, whereas the B. pilot may remain more than 12 hrs. in the air, and mostly over hostile ter., or over the sea. Often he must defend himself with the aid of the darkness and cloud, and with the skill of the crew and their machine-guns. The key-man in a B. aircraft is the navigator. His task is threefold. He gives his pilot the directions necessary for reaching the target at the appointed time, he carries and releases the bombs and must bring the aircraft safely back to its base. Under ideal conditions his task is not difficult; but conditions were rarely ideal in practice, and darkness, clouds, air currents, and storms might all operate against him, particularly air currents. His aids to navigation are radio position finding, usually known as 'radio fix,' map-reading, and astronomical navigation. The first is limited by distance; the second useless if landmarks are obliterated; and the third is practicable only in starlight. Bombs are not 'projected' or thrown, but 'released.' Air resistance acts as a brake, and the bomb moves forward as well as downward, in a curved track. The bomb-aimer uses a bomb-sight on which he has set height, air speed, and size of bomb. This instrument automatically gives a correct aim. At the right moment the bomb is released and travels steadily towards the target. The wind has little effect on its flight, though an important influence which affects bombing is the strength and direction of the wind in which the aircraft itself is flying, and this must be exactly calculated and set on the bomb-sight. To attack a small target, e.g. a narrow ship, the bomb-aimer will release a 'stick' of bombs, i.e. a number in succession designed to straddle the target. The chances that one of the bombs will hit it are thereby increased. Electrical storms may cause a B. aircraft to become, in effect, an electrical conductor, which means a danger of fire in those parts through which the electrical

discharge cannot easily pass. In a storm, too, the navigational instruments may become unserviceable, especially the compass, which may lead to serious results. Ice may be formed on a B. when flying through some clouds, particularly cumulus. Condensation will occur on the wings, and a sudden drop in temp. causes the water thus formed to freeze. Ice on the wings may deprive them of their lift, and ice in the carburettor of the engine may choke out its fire.

All the Brit. Bs. used in the early years of the war, except the Wellington, were built of metal and, with the exception of the Fairey Battle, were multi-engined. All carried an armament of machine-guns, primarily for defence. In all types, except the Battle and Hampden, hydraulically worked gun-turrets were fitted, enabling the gunner to train his guns against the pressure of the air stream at high speeds. The tail turret of the Whitley mounted the formidable armament of 4 Browning guns, controlled by 1 rear gunner sitting in the turret. From the beginning of hostilities many of the aircraft of B. Command were able to fly with substantial loads (as much as 1500 lb.) to points as far as 800 m. from their bases and return. The most distant objectives at that period included Warsaw, Danzig, Vienna, Prague, and Turin. Subsequently sev. types of the above-mentioned aircraft were improved. The largest B. for some time was the Stirling, with a wing span of 99 ft., a length of over 87 ft., and a height of 22½ ft.—measurements which were only slightly exceeded by any other or later B. during the war against Germany. It is impossible in this space to attempt a summary of all the leading makes of B. during the war, but as the war progressed there were constant developments from previous types. The De Havilland Mosquito XVI. was the standard light B. serving with the R.A.F. at the end of the war in Europe. It first joined B. Command towards the end of 1943. Its span was 54 ft.; 44½ ft. long; maximum level speed, 400 m.p.h.; range at operational speed, 1500 m.; and bomb load 4000 lb. The Handley-Page Halifax VI. was the latest of the Halifax type. Throughout its operational career the Halifax underwent constant development, and this latest type during the closing months of the war was a direct development of Halifax III., which latter had a span of 98 ft., a 4-gun dorsal turret, and radial motors. The Halifax VI. had a span of 104 ft., was 71 ft. in length, speed 323 m.p.h. at 3000 m. range; carried 1 manually operated Vickers machine-gun in the nose; 4 .303-in. calibre Browning machine-guns in the dorsal turret amidships, and 4 in the tail turret; carried a bomb load of 14,500 lb., and weighed 30 tons when loaded. At the peak of production early in 1944 there were some 40 odd factories devoted to Halifax production. The Avro Lancaster will go down in the hist. of military aviation as one of the really great aeroplanes of the Second World War. Its span was 102 ft.; length, 69½ ft.; speed, 265 m.p.h. level,

210. operational; range, 3000 m.; armament: 2 .303-in. calibre Browning machine-guns mounted in hydraulically operated nose-turret, 2 .303-in. Browning machine-guns in dorsal turret, and 4 others in the tail turret; bomb load, 14,000 lb. (normal), maximum, 22,400 lb.; weight (loaded), 28 tons. The Lancaster remained in the forefront of the world's heavy Bs., capable of carrying a heavier load than had ever been handled by any operational heavy B. Together with its descendant, the Avro Lincoln, it played a considerable part in the final defeat of Japan. The Lancasters were the first Bs. to carry the 4000-, 8000-, 12,000-, and 22,000-lb. bombs. Apart from its remarkable contribution to B. Command's night offensive over Germany in 1943-45, the Lancaster was outstanding for sev. special missions, such as the breaching of the Möhne and Eder dams, and the sinking of the *Tirpitz* in Norwegian waters. At critical periods of the land fighting in Europe, too, large formations operated by day, destroying the Ger. armies on the battlefield. Among Amer. machines the Lockheed PV-1 Ventura and the Ventura medium Bs. were most useful machines. Pathfinder for the U.S. Navy B. formations over the Pacific was one of the chief tasks allotted to the Ventura, which was fitted with a very comprehensive radio equipment. The Boeing B-17G Fortresses served in large numbers on all fronts during 1944, first operating from Great Britain towards the end of 1943 and, together with the Liberators, carried the daylight offensive against the Ger. aircraft industry to its zenith in the spring of 1944. The span of the Boeing was 103 ft. 9 in.; length, 73 ft.; maximum level speed, 268 m.p.h.; operating speed, 220 m.p.h. at 10,000 ft.; armament, 13 .50 (12.7-mm.) machine-guns; bomb load, 9600 lb. (see further under FLYING FORTRESS). The span of the other heavy Amer. daylight B., the Liberator, was 110 ft.; length, 67 ft.; speed, 280 m.p.h. level, operational speed, 200 m.p.h. at 25,000 ft.; armament, 14 .50 (12.7-mm.) machine-guns; and bomb load, 8000 lb. In short, the Amer. B. carried a heavier armament than the Brit. machines, but a much smaller bomb load. The Amer. Boeing Super Fortress was a machine with a span of 141 ft.; 99 ft. long; speed, 350 m.p.h. (level), and over 300 m.p.h. operating speed; normal operating altitude was 25,000 to 30,000 ft.; bomb load, 6000 lb. (at 3000 m.) and 17,500 lb. at a range of 1000 m. Its weight loaded was 60 tons. This B-29 Super Fortress Boeing Model 345 was the largest B. operated by any nation in the Second World War. It very soon became as famous as its predecessor B17 Flying Fortress. It operated first from Chinese bases, and then from the Marianas. The Super Fortresses of the 20th U.S.A.F. had by July 1945 built up an air offensive against Japan's industry and economic life on a scale comparable with the combined U.S.A.A.F. and R.A.F. offensive over Germany. For full particulars of the planes of all

nations consult *Aircraft of the Fighting Powers* (6 vols.), compiled by O. G. Thetford and C. B. Maycock, and ed. by D. A. Russell. See also AERIAL WARFARE.

Bombetoka Bay, a bay in the W. of Madagascar.

Bombic Acid, see under SILK.

Bombus, generic name for the social bees which are popularly known as humble-bees. They belong to the family Apidae of the order Hymenoptera, and form the largest of Brit. species. The prevailing colours are yellow, red, and black. See BEES.

Bombycidae, family of lepidopterous insects composed of small, dull moths with rudimentary maxillae, small palpi, no proboscis, and no frenulum. *Bombyx mori* is the true silkworm (q.v.).

Bombycilla, term formerly applied to some species of birds in the family Ampelidae which are known as waxwings. *B. garrulus* is the *Ampelis garrulus* of Linnaeus.

Bombyliidae, family of dipterous insects distinguished chiefly by the long proboscis. The body is short, stout, and very hairy, and the legs are long, slender and weak. The species are bee-like in appearance, and are remarkable for their great swiftness in flight, during which they emit a humming sound. *Bombylius major* and *B. medius* inhabit Brit. woods and feed on nectar.

Bombyx, see under SILK.

Bommel, tn. of the Netherlands in the Gelderland prov., situated on the l. b. of the Waal, 7 m. S.W. of Thiel.

Bommelwaard, is. of the prov. of Gelderland in the Netherlands, formed by the Waal and the Maas, and containing the castle-fortress of Loewenstein. There are many small vils. on the is., as the soil is fertile.

Bomvanaland, dist. of Cape Prov. in S. Africa.

Bon, Cape, the most northerly point of the coast of N. Africa. It is on the Mediterranean Sea, 58 m. N.E. of Tunis.

Bona, or **Bône**, seaport of Algeria, in the prov. of Constantine. It is situated at the base of a hill and built round by ramparts. Not much of the old tn. remains, but the new tn. is a prosperous Fr. city. Marble quarries, cork woods, and iron and copper mines are in the neighbourhood of B. Pop. 82,400.

Bonacci, Leonardo, see LEONARDO OF PISA.

Bona Dea (the good goddess), a Rom. divinity. The name was given to Ops, Vesta, Cybele, and Itha by the Gks., and by the Romans to Fauna. The latter was worshipped at Rome as a chaste and prophetic divinity; her name was never heard in public, and she revealed her oracles only to females; nor was she ever seen by a man. For these reasons her festivals were celebrated only in the night by Rom. matrons in the houses of the highest officers of state. Her temple festival was celebrated on 1st May and the secret rites on the night of 3rd-4th December (or May) at the house of the consul or prætor, as the sacrifices were offered on behalf of the whole Rom.

people, the solemnities being conducted by the vestals. P. Clodius profaned the sacred ceremonies by entering the house of Cæsar in the disguise of a woman, 62 B.C.

Bonal, the most southerly of the trib. states of Chota-Nagpur, in the prov. of Bihar, India. It has large timber tracks. Its area is 1297 sq. m., and its pop. 25,000.

Bonaire Island, or **Buen Aire Island**, the most easterly of the Dutch W. Indian Is., situated off the N. of Venezuela, in lat. 12° 2' N. and long. 68° 22' W. Pop. 7500.

Bonafé, Louis Gabriel Ambroise, Vicomte de (1753-1840), Fr. philosopher and politician, b. at Le Monna, near Millau. Being opposed to the principles of the Revolution, he emigrated, and after serving for a short time in the army of the prince de Condé, he settled at Heidelberg. In 1796 he pub. his *Théorie du pouvoir politique et religieux*, and in it he prophesied the return of the Bourbons. After the Restoration he became a prominent man in affairs of state, and advocated the strongest conservative measures, attacking all reform. In 1822 he became a minister, and in the following year was raised to the peerage. After the revolution of 1830 he retired from politics, and on his refusal to take the necessary oaths his peerage was taken from him. He d. in Nov. at his residence at Le Monna. Amongst the more prominent of his works are the following: *Législation primitive*, 1802; *Recherches philosophiques*, 1818. He had 4 sons; of these Louis Jacques Maurice (1787-1870) became a cardinal, 1841, and Victor de Bonald, his heir, was known as a writer. Amongst his works was a life of his father.

Bona Notabilia, legal phrase designating goods of sufficient value to be accounted for. Where a man dies leaving goods of a sufficient amount in different dioceses, in order to prevent confusion arising from double administration, the metropolitan of the prov. (in pursuance of the jurisdiction over wills which anciently belonged to the eccles. courts) grants probate or letters of administration. The value necessary to constitute property B. N. was fixed by a canon of 1603 at £5.

Bonanza, Sp. word signifying 'fine weather at sea,' or 'success.' The term is used in the mining dists. of various countries, for a mine that yields a rich mass of ore. It was used as the name of some particular silver mines in Nevada, which for sev. years yielded great quantities of metal. The term is now employed for any successful business enterprise.

Bonanza Creek, Yukon, Canada, a valley with rich gold deposits, opening into the Klondyke near Dawson.

Bonaparte, Napoleon, see NAPOLEON I. **Bonaparte**, the family name made famous by Napoleon I. In its original lt. form it was Buonaparte, and in this form was retained by the whole family up to the year 1796. The family were descended from an anct. It. family who are heard of as early as the twelfth century, and who seem to have settled in

Corsica during some part of the sixteenth century. Here the family remained until after the occupation of Corsica by the Eng. in 1793. Charles Bonaparte, the father of the famous emperor, was *b.* in 1746, and educated in law at Pisa. In 1767 he married Letizia Romolina, a beautiful girl descended from an anct. Corsican family. Charles B. held sev. offices under the Crown of France in Corsica. He obtained for his second son, the great Napoleon, a place in the military school at Brienne during the period that he was resident in France as part of a deputation of Corsican nobles. In 1779 he returned to Corsica, and 6 years later he *d.* at Montpellier, whither he had gone for his health. His wife, Letizia, survived him for some considerable period, and saw the rise and fall of the fortunes of the family. She spent most of her life after 1814 in Rome with her step-brother, and *d.* in 1836, leaving a considerable fortune, which she had taken care to save during the days of the splendour of Napoleon.

Joseph Bonaparte (1768-1844), *b.* in Corsica, Jan. 7. He was educated in France, but returned to Corsica at an early age and later studied law at Pisa. He was with the rest of the family on the democratic side as opposed to the party of Paoli, and left Corsica when the Paolists were victorious. He spent some time immediately after this in Paris, but shortly afterwards seems to have settled in Marseilles, where he married a certain Mlle. Julie Clary. He was continually making efforts and taking part in plans for the recovery of Corsica. In 1796 he took part with his brother in the It. campaign, and in the following year was appointed minister at Rome. On the outbreak of the movement which led to the foundation of the Rom. republic he left Rome and returned to Paris. Here he became a member of the Council of the Five Hundred, representing Corsica. He retired from this position in 1799, but during the years which followed he was of great service to the state. He helped to negotiate a treaty with the U.S.A., and was one of the representatives of France at the negotiations which led to the treaty of Amiens in 1802. He was all this while a member of the ministry and helped also in the negotiations for the Concordat. In 1805, during the absence of Napoleon, he acted as the head of the gov. In the same year he proceeded to Naples at the head of the Fr. army, and in the following year he was proclaimed king of Naples. Here he was faced with enormous difficulties, bankruptcy, a corrupt nobility, and a feudal state. In 1808 he was proclaimed king of Spain, but his title was purely nominal, and although he remained in Spain until 1813, he was continually being harassed both by the Eng. and by Napoleon himself. On the surrender of Paris in 1814 he immediately retired and played but a small part in the campaign of the Hundred Days. He aided his brother to escape, and then retired to America, where he settled on the banks of the Delaware. In 1830 he attempted to

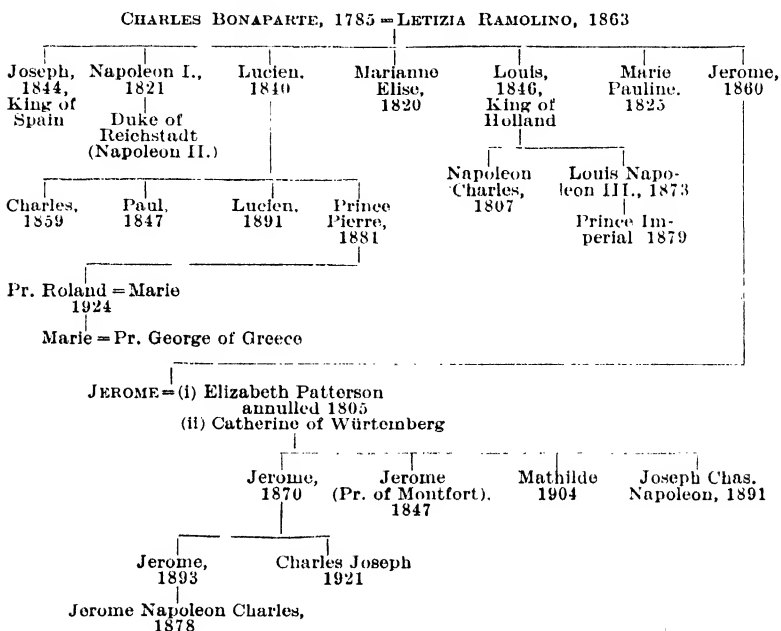
get the claims of the duke of Reichstadt (Napoleon II.) recognised by the European powers, but failed. He afterwards revisited Europe, and settled down in Florence, where in 1844 he *d.*

Lucien Bonaparte (1775-1840), prince of Canino, *b.* at Ajaccio, Corsica, on May 21. He was intended for the Church, and with that end in view was sent to the seminary at Aix, but on the outbreak of the Revolution in 1789 he became a Jacobin, and was continually urging his brothers to make plans against the Paolists in the is. of Corsica. He retired to Toulon when the Paolist movement took place. In 1794 he was for a short time imprisoned because of his too revolutionary ideas, but was released owing to the influence of Napoleon. In 1797 he refused a place offered him in the army of Egypt, preferring to enter the Council of the Five Hundred. In 1799 he was its president, and was able to give considerable aid to Napoleon when Napoleon overthrew the councils on the 19th Brumaire. He was, however, essentially a democrat, and during the 5 years that intervened between the overthrow of the council and the assumption of the imperial crown by Napoleon, affairs were very strained between the brothers. After 1804 he became for a short time one of Napoleon's ministers, but owing to personal differences with his brother was forced to retire and was given the position of minister at the Sp. court. Later he resigned his position in Madrid and returned to France. He gave further offence in 1803 by marrying the widow of a stockbroker and publicly bestowing on her the name of Bonaparte. He was therefore ordered to leave Fr. ter. and retired to Italy. In 1807 he was offered the kingdoms of Naples and Spain on condition that he renounced his wife. This he refused to do. He took the papal title of prince of Canino. He attempted to reach America, but was captured by the Eng. and brought back to England, where he remained until 1814. During the Hundred Days he offered help to Napoleon, and seems to have been the only member of the family who remained cool under the stress of the period. After 1815 he spent the remainder of his life in Italy, dying in June 1840. He left issue, 4 sons and 6 daughters.

Louis Bonaparte (1778-1846), *b.* at Ajaccio, Corsica, on Sept. 2. He acted as aide-de-camp for Napoleon during the It. campaign, having received a military education at Brienne, and was again with Napoleon during the Egyptian campaign. He was married in 1802 to Napoleon's stepdaughter, the beautiful and accomplished Hortense Beauharnais. He received still further advancements at the hands of his brother, becoming successively a general and governor of Paris. In 1806, in pursuance of his general policy, Napoleon made him king of Holland. From the very outset his policy seems to have displeased Napoleon, and his attempts to become popular and to govern liberally added to this displeasure. By 1809 Napoleon had resolved that his

control of Holland should become real, and in 1810 Louis fled the country and went into exile in Bohemia. For the rest of his life after 1815 Louis lived chiefly at Rome, where he took a great pleasure in literary and philosophic studies. His sons were: Napoleon Charles (*d.* 1807), Napoleon Louis (*d.* 1831), and Charles Louis Napoleon (Napoleon III., *d.* 1873).

Napoleon at the battle of Waterloo, commanding a part of the Fr. left wing, and showing great valour in his attack on Hougoumont. After 1815 he lived principally in Italy and Switzerland until 1851, when on the accession of his nephew, Louis Napoleon III., he came back to France and occupied some high state positions until in June 1860 he *d.*



Jerome Bonaparte (1784–1860), youngest brother of Napoleon, *b.* at Ajaccio, Corsica, on Nov. 15; educated in the college at Juilly, and took part in the family fortunes during the revolutionary period. He was a lieutenant in the navy and on the outbreak of war with England in 1803 he was cruising off the W. Indies. He travelled through the U.S.A., and here, although a minor, he married a Miss Patterson, the daughter of a Baltimore merchant. His marriage was displeasing to Napoleon, who declared the marriage void (1805). He again took part in an expedition of the navy, and on his return in 1806 was made a prince of France. He took part in the Ger. campaign of 1806, and was by the treaty of Tilsit (1807) made king of Westphalia. In Aug. 1806 he had married Catherine, daughter of Frederick, king of Württemberg. After the downfall of Fr. power in Germany he retired to France, and afterwards to Switzerland. In 1815 he helped

Marianne Elise Bonaparte (1777–1820), *b.* at Ajaccio, Corsica, on Jan. 3. She was educated at St. Cyr, but shortly after the outbreak of the Revolution returned to Corsica. In 1797 she married Felice Bacciochi, a wealthy Corsican. She was, however, ambitious, and Napoleon gave her the principality of Lucca. In 1808 she received the grand duchy of Tuscany, and was an important influence in It. politics. Her relations with Napoleon were frequently strained. After 1815 she retired first to Italy and then to Austria, where she *d.* near Trieste in 1820.

Marie Pauline Bonaparte (1780–1825), *b.* at Ajaccio, Corsica, on Oct. 20. At the age of 17 she married Gen. Leclerc, who *d.* in 1802. In 1803 she married Prince Camillo Borghese, and went to live in Rome. She soon, however, returned to Paris, where the manner of her life caused great scandal. In 1806 she was made a duchess. In 1814 she retired to Elba with her mother. She seems to have

been devoted to her brother Napoleon, and even offered to share in his exile.

Mathilde Letitia Wilhelmine (1820-1904), *b.* at Trieste. Married, in 1841, Prince Anatole Demidoff; separated after four years owing to the prince's conduct, but, at the instance of Tsar Nicholas, was given a substantial allowance. When her cousin, Louis Napoleon, became president of the republic, Mathilde resided in Paris, acting as hostess at the Elysée until his marriage. She was distinguished as the friend and patron of authors and artists, and she herself showed no mean ability as a painter.

Of the other descendants of the B. family the more important are the 3 sons of Lucien, Charles Lucien, Louis Lucien, and Pierre Napoleon. The first took practically no part in politics, but established himself as an ornithologist. The second, who had played at politics during the regime of his cousin, after 1848 established some considerable claim to fame as a philologist; whilst the third, who spent the greater part of his life in political work of some description, led an otherwise licentious life, and *d.* in 1881, practically unknown. He left 2 children.

Napoleon Joseph Charles Paul (1822-1891), the second son of Jerome, king of Westphalia, by his second wife, Catherine, princess of Würtemberg. Commonly known as Prince Napoleon and 'Plon-Plon.' After the death of the Prince Imperial he became the head of the Imperialists. He *d.* in Rome 1891.

Napoleon Eugène Louis (1856-79), the only son of Napoleon III., *b.* at Paris, Mar. 16. He was always delicate, but took part in the early part of the Franco-Prussian war, later coming with his mother, the Empress Eugénie, to England, where they settled down at Chislehurst. He was recognised as Napoleon IV. by the Imperialists on the death of his father. He volunteered for service with the Eng. during the Zulu campaign, and was killed during that campaign on June 1, 1879. He was buried at Chislehurst.

Prince Roland Bonaparte (1858-1924), son of Pierre Napoleon B. and grandson of Lucien, second brother of Napoleon III. He was educated for a military career, but after entering the Fr. army in 1879, he relinquished arms compulsorily owing to a law which precluded his family from the Fr. army. He then travelled widely, and studied science and anthropology. Was president of the Fr. Geographical Society and, in 1922, of the International Geographical Union.

Charles Joseph Bonaparte (1851-1921), younger son of Jerome Napoleon B. and grandson of Napoleon I.'s youngest brother, Jerome, by his first marriage with Miss Patterson of Baltimore. Educated at Harvard and called to the Amer. Bar. He became secretary of the navy in President Roosevelt's gov. of 1905, and, later, attorney-general.

Bonar, Horatius (1808-89), Scottish Presbyterian divine, *b.* in Edinburgh; educated at the high school and the univ. of that tn. He began his work as a minister at Leith, and from there he

passed on to Kelso, where he remained until 1866. At the disruption in 1843 he had become the minister of the Free Church of Kelso, and from here he passed on to the Chalmers Memorial Church in Edinburgh. He was made D.D. in 1853 by the univ. of Aberdeen, and in 1883 he was moderator of the General Assembly. He ed. the *Presbyterian Review* and other papers. Among the more noted of the hymns written by him may be mentioned *Go labour on, I heard the voice of Jesus say*, and *When the weary seeking rest*.

Bonasa, genus of grouse which belongs to the family Phasianidae. *B. umbellus* is the ruffed grouse of N. America, which is characterised by the absence of feathers on the toes and lower part of the legs, the long rounded tail, crested head, and the ruff on its neck. *B. sylvestris* is the hazel grouse.

Bonasoni, Giulio (c. 1498-post 1572), It. painter and engraver, *b.* at Bologna; studied under Sabbatini. His reproductive work, which was done almost entirely with the graver, includes prints after Michelangelo, Raphael, and Titian. His original paintings were mainly for churches, one of the best being on the subject of purgatory.

Bonasus, the name of the European species of bison (*q.v.*).

Bonaventura, St. (1221-74), Franciscan theologian, *b.* at Bagnorea in Tuscany. His real name was John of Fidanza. He was destined for the Church from his youth, and in 1243 he entered the Franciscan order. He studied at Paris, where in 1253 he became a teacher, succeeding his own master, John of Rochelle. In 1255 (or 1257) he became a doctor, and shortly after he was selected general of his order. On the death of Clement IV. it was his influence which patched up the quarrel of the cardinals and led to the election of Gregory X., who rewarded him with the red hat of a cardinal and the bishopric of Albano. The same pope insisted upon his attendance at the Council of Lyons, where he *d.* a martyr to his own asceticism. He was popularly regarded as a saint before his death, but was formally canonised by Sixtus IV. in 1482, and ranked as sixth amongst the doctors of the Church by Sixtus V. in 1587. Dante places him amongst the saints in his *Paradiso*. His works were devoted to the defence and praise of his order, but his doctrines are in marked contrast to those of Thomas Aquinas and Roger Bacon. The purely intellectual was never to him in as high a plane as the power of the affections and the heart. He condemns the Aristotelian doctrine of the eternity of the world. The warmth of his style and his religious fervour gained for him the title of Doctor Seraphicus. Amongst his chief works may be mentioned *Itinerarium Mentis ad Deum*, *Breviloquium*, *De Reductione Artium ad Theologiam*, and *De Septem Itineribus Aeternitatis*. Amongst the eds. of his works are: Rome, 1588-96; Lyons, 1668; Venice, 1751; Rome, 1882-1902.

Bona Vista, name of a tn., a bay, and a cape in Newfoundland. The tn. is one

of the oldest on the is., and is also a port. Its pop. is 4000. The cape is on the E. coast, and has an altitude of 150 ft., upon which is a lighthouse with a revolving light. The bay is 30 m. wide.

Bonavista, Africa, see BOAVISTA.

Bonchurch, vil. in the Isle of Wight, England, about 1 m. from Ventnor. It is near S. Boniface's Down, and has an old and a new church, the latter containing the tomb of A. C. Swinburne. In the vicinity is Pulpit Rock. Pop. 500.

Bonci, Alessandro (1870-1940). It. singer, b. at Cesena, Feb. 10, 1870, of humble parentage. His beautiful voice procured for him entry to the *Liceo* at Pesaro, and in 1892 he was first tenor in the choir of the basilica of Loreto. Began in opera at Parma in 1893 in *Falstaff*, and his fame soon spread throughout the world. In certain operas such as *Sonnambula*, *Puritani*, *Favorita*, *Elisir d'Amore*, and *Bulio in Maschera* he was without a peer.

Boncourt, Louis Charles Adelaide de Chamisso de, see CHAMISSO, ADALBERT DE.

Bond, in law, a deed, i.e. a document under seal, by which one party, the 'obligor,' binds himself to perform or refrain from performing some act, under a penalty if he fail, to be paid to the other party, the 'obligee'; the B. to be void on the performance of the act or the payment of the penalty. If the B. is for the payment of money, the condition in the B. usually is that the B. shall become void if the obligor pays to the obligee a smaller sum, generally one-half of the sum named in the B., together with interest. A B. runs for 20 years, and action on the B. is barred after that period. If the B. is for the refraining from doing a specific act, the payment of the penalty alone will not be sufficient, the obligor must not continue in the act, e.g. of service with another firm. The Bs. of a limited company are debentures, to be repaid, at a fixed period, or from a sinking fund. Other Bs. are 'bottomry Bs.' for sums advanced for the continuance of a voyage, secured on the ship, to be repaid on safe arrival. Bs. given by holders of confidential posts are generally known as guarantees.

Bond, Sir Edward Augustus (1815-98), Eng. librarian, b. at Hanwell on Dec. 31, the son of a schoolmaster. He was educated at the Merchant Taylors' School, and in 1832 obtained a post at the Public Record Office. Six years later he became an assistant librarian of the MSS. dept. of the Brit. Museum. In 1867 he became keeper of the MSS., and 11 years later he became prin. librarian. To him are due a number of the reforms and improved efficiency of sev. depts. in the Brit. Museum. He ed. 4 vols. of facsimiles of A.-S. charters, and also pub. *The Speeches of the Trial of Warren Hastings*. He was knighted on Jan. 1, 1898, and d. on the following day.

Bond, Jessie (1853-1942), Eng. actress, b. in London; educated in Liverpool. Noted as an oratorio singer in Liverpool and other N. cities. Her first theatrical performance was as Cousin Hebe in the

first performance of *H.M.S. Pinafore*. She took leading parts in most of the Savoy operas as they appeared, excelling as Iolanthe, Melissa in *Princess Ida*, and particularly as Phoebe Meryll in *The Yeomen*, Mad Margaret in *Ruddigore*, and Tessa in *The Gondoliers*. She was a true artist, of tiny and dainty appearance, and with a fine flexible mezzo-soprano trained in the best of schools, that of Manuel Garcia. Her last appearance was in 1896, just before her marriage.

Bond, Sir Robert (1857-1927), Brit. statesman, b. at St. John's, Newfoundland; to which place his father, John B., had moved from Torquay. He was educated at Queen's College, Taunton, and at Edinburgh Univ., where he took honours in law. He then returned to Newfoundland, where he entered the legislature in 1882, and 2 years later was elected Speaker of the House of Assembly. In 1889 he became colonial secretary in a Liberal gov. In 1890 he assisted Lord Pauncefoot in his negotiations with the U.S.A. for a reciprocity treaty, and was largely responsible for the completion of the Bond-Blaine Convention. In 1900 he was appointed premier, and in 1902 completed the Hay-Bond Treaty with the U.S.A. Unfortunately, it did not pass the Senate. In 1907 he attended the Imperial Conference and received the freedom of London, Bristol, and Manchester. In 1909 his gov. was defeated. Resigned leadership and seat in 1914; and d. at St. John's, Mar. 16, 1927.

Bond, William Cranch (1789-1859), Amer. astronomer, b. at Portland, Maine. He erected a private observatory, and was one of the exploring party who went to the S. Seas with an Amer. expedition in 1838. On his return he was made the director of the observatory at Harvard Univ., and whilst holding that position he discovered a satellite of Neptune and an eighth satellite of Saturn.

Bonde, or Bondor (Old Norse *buandi*, inhabitant), term meaning a member of the peasant class. This class used to form in Scandinavian countries one of the orders composing the diet, and still does so in Finland.

Bonded Warehouse, store approved by the revenue or custom authorities in which goods that have been imported and are subject to duty are stored until the bondor withdraws them for exportation or pays the duty. Previous to the establishment of these places in England, the payment of the duties had to be settled immediately on importation. This system had many drawbacks, and one of the chief was that the prices of goods were raised in order that the large duties could be paid. In 1733 the first move was made towards the B. W. scheme by Sir Robert Walpole, but it was in 1803 that the system was finally adopted.

Bondeno, tn. of Italy, situated to the W.N.W. of Ferrara, from which it is 11 m. distant. Pop. 19,000.

Bonder, see BONDE.

Bondfield, Margaret Grace, Eng. trade unionist and Labour leader, b. Mar. 17, 1873, near Chard, Somerset; daughter of

William Bondfield, worker at a lace factory in Chard. When less than 15 she went into a drapery business; and in 1898 she became assistant secretary of the National Union of Shop Assistants. She succeeded Mary Macarthur on her death in 1921 as secretary of the National Federation of Women Workers; was chairman of the Trades Union Congress, 1923; and in Nov. 1923 was elected M.P. for Northampton. In the Labour Gov. of 1924, she was parl. secretary to the Ministry of Labour; she attended the conference of the I.L.C. at Geneva, where her activity was prominent. She lost Northampton at the General Election of 1924; but re-entered Parliament in July 1926 as member for Wallsend, which she represented until 1931. In the Labour Gov. of 1929-31 she was minister of labour, thus becoming the first woman to hold Cabinet rank. While in office, she was confronted with the serious problem of unemployment, and in 1929 she sponsored the Unemployment Insurance Bill—an important measure in social legislation. Privy Councillor, 1929; L.L.D., univ. of Bristol, 1930. She lectured in Canada, U.S.A., and Mexico, 1938, and in America again in 1941-43. Chairman of women's group on public welfare since 1939; vice-president National Council of Social Service. Dept. secretary Voluntary Service Advisory Committee, 1940.

Bond Street, famous and fashionable shopping centre of the W. end of London, running from Piccadilly, where it is called Old B. S., to Oxford St., where it becomes New B. S. It received its name in memory of its builder, Sir John Bond, a member of Queen Henrietta Maria's household.

Bondone, Ambrogio di, see GIOTTO.

Bondu is a dist. in Senegal, Fr. Equatorial Africa. It is situated between the R. Faleme and the upper course of the Gambia. It is hilly in the centre and S., but generally fertile, having fine forests and valuable fruit trees. It is well cultivated, the chief products being rice, grain, fruits, melons, cucumbers, tobacco, cotton, and indigo. The Fula are the prin. inhab., and their religion is Mohammedanism. Pop. 1,500,000.

Bonduku, tn. of W. Africa, in the Fr. colony of the Ivory Coast, situated some 200 m. inland, near the W. border. It was placed under Fr. protection by Capt. Berger in 1888. Gold dust is the prin. object of commerce. Pop. 4000.

Bondy, vil. in the dept. of Seine, France, in the arron. of, and 6 m. from, Saint-Denis. It manufs. ammonia and has a trade in cheese. There was much fighting here between Fr. and Gers. in 1870-71. Pop. 15,000.

Bone, the hard tissue that constitutes the skeleton or framework of the body. This framework serves to support some structures as a central core, and to protect others as a surrounding casing. The different parts of the framework are articulated or jointed with each other and are converted into levers by which a great number of movements can take place through the instrumentality of muscles.

Bs. are of various shapes, according to the functions they fulfil. Long Bs., of cylindrical form, are characteristic of the limbs; flat Bs., with a certain amount of curvature, are characteristic of protective Bs.; short Bs. are characteristic of the wrist and instep; while such Bs. as the vertebrae and those of the face are somewhat more irregular in form. The total number varies according to age, as many Bs. which are separated in infancy become fused as time progresses, and certain small Bs. are frequently developed in some individuals late in life. There are, however, 206 distinct Bs. in the ordinary adult. The functions and dispositions of the Bs. will be dealt with in the articles on SKELETON, SKULL, ARM, etc. Human B. consists of about 31 per cent of organic matter, and about 69 per cent of mineral salts, of which calcium phosphate forms the greater part, being 58 per cent of the whole bone matter. The animal matter may be removed by boiling or charring. When the mineral matter only is left, the B. appears hard and brittle. The mineral salts may be dissolved out by treating the B. with acid, when a jelly-like substance remains, preserving the shape of the B., but possessing none of its characteristic hardness. Thus the combination of animal and mineral substances serves to produce a substance which is at once hard, tough, and elastic. The qualities of B. as a useful substance in itself have been recognized in the arts. It is stronger than oak, can withstand a tremendous crushing strain, and yet is so elastic that savages have used the ribs of large animals for making bows. An examination of a fresh B. shows it to be covered with a strongly adhering membrane, which is called the *periosteum*. Underneath this the B. appears as a hard compact mass, gradually decreasing in hardness towards the axis, so that the inner part of the B. is of a spongy nature, while in certain situations there is a cavity, often filled with marrow, in the interior. In curved Bs. there is a thickening of the hard compact portion on the concave side, where the greatest strain occurs. The B. is thus most economically constructed, the greatest strength and elasticity being combined with lightness of material. All Bs. are provided with channels by which the nourishing elements in the blood may penetrate to the interior, while the vessels of the periosteum enter the surface by many fine arteries. Inflammation of B. is called *ostitis*, or *osteitis*. It is due to the microbe *Staphylococcus pyogenes aureus*. The germs enter with the blood stream, and owing to the dense and compact nature of the B. tissue, they may find a lodgment there, multiply, and form masses of pus. The part of the B. most likely to be affected is the newly growing portion between the main shaft and the cartilaginous end. The symptoms unfortunately are not very definite at first, pains akin to rheumatism being felt at the joints, and ultimately a sensation of tenderness develops in the B. itself and the temp. increases. Surgical measures

only are possible; an incision is made into the B., and the diseased part scraped out. No mistake must be made about getting rid of the affected matter; it is better to sacrifice some healthy tissue than allow any trace of the disease to remain. The cavity, of course, must be thoroughly disinfected. In *condensing ostitis* the medullary cavity is filled with a dense bony mass, and new B. appears on the surface, so that the B. becomes heavier than normal. Bs. are liable to fracture by direct violence as in concussion, or indirect violence as from too great a strain. The fracture may be simple, when the B. is broken into 2 pieces; or compound, when the B. is crushed, or broken in sev. pieces. The treatment aims at 'setting' the B., or placing and keeping the broken ends in such a position that the natural healing powers of the B. tissues may bring about a fusion. It is desirable, of course, that when the fracture is healed there should be no avoidable shortening or stiffness of the limb. Careful adjustment in the first place, constant inspection during treatment, and the earliest possible movement of the limb are necessary to a complete and successful healing of the fracture.

Bone, Henry (1755-1834), Eng. enamel painter, b. in Cornwall; apprenticed at Plymouth, and afterwards worked at the Bristol china works. Elected a member of the Royal Academy in 1811. His works are now eagerly looked for by connoisseurs; the best known are the 'Death of Dido,' and 'Bacchus and Ariadne.'

Bone, Sir Muirhead (b. 1876), Scottish etcher and painter, studied at the school of art in Glasgow, and came to London in 1901, where he estab. his reputation by his remarkable etchings of buildings, docks, etc. In 1906 his 'Great Gantry, Charing Cross Station,' was purchased by the National Art-Collections Fund and given to the Brit. Museum. From 1916 to 1918, he was official artist on the W. front, and with the fleet. He is a trustee of the National Gallery and the Imperial War Museum. He was knighted in 1937, and in 1940 was appointed official war artist to the Admiralty.

Bone-ash, the white residue remaining when bones are heated with access of air till all organic matter is oxidized. Bones are usually boiled to remove the fat and glue-forming substances and the remainder is burnt. The ash consists of tricalcium phosphate, and is used as a manure, in the manuf. of superphosphates, and in the manuf. of porcelain.

Bone Beds, strata or deposits of bones found on land or beneath the sea. They are thin layers of the remains of bones of reptiles, fishes, and mammals, occurring in certain places. At Ludlow, e.g., there is a B. B. stretching for many m. There are some also in the S.W. of England, and similar ones in Germany. The Rhaetic B. B. so called from deposits found at first near the Rhaetic Alps—form part of the Triassic System. There is a B. B. under the sea near the Faroe

Is., and this contains shells mixed with the bones.

Bone-black, animal charcoal, obtained by the dry distillation of bones. When the fat and gelatines are removed from the bones the remainder is heated in closed retorts. The product is about one-tenth charcoal, the remainder being calcium and magnesium phosphates and other mineral salts. It has been used in sugar-refining for decolorising syrups.

Bone Manure, general name for fertilizing agents in which powdered bones, or substances derived from bones, are present. The most important mineral element which has to be supplied to cultivated soil is phosphorus. The value of bone as a phosphorus supplying manure was realized by Liebig in 1840, and at the experimental farm of Sir John Lawes at Rothamsted in 1843 the possibilities of artificial phosphates were investigated. The bones were dissolved in sulphuric acid to obtain the calcium superphosphate, which was soon found to be of the highest value as a manure. The superphosphate is usually mixed with powdered bones in varying proportions to suit the nature of the soil and the particular crops intended.

Bone Oil, a fetid, blackish-brown, thick liquid obtained by dry distillation of bone, or by heating them with water and by use of solvents. Extracted also in preparation of bone-black, and used in soap-making. Contains ammonia, sulphuretted hydrogen, pyrol, etc. Dippel's oil, an animal oil produced by distillation of stags' horns, is used as medicine.

Bone, see BONA.

Boner, Ulrich, Swiss writer of fables who fl. during the fourteenth century. He was b. at Berne, and was descended from a famous Bernese family. He probably took clerical orders and became a friar. His name is of frequent occurrence between the dates 1324 and 1349. In 1461 his book of 100 fables, *Der Edelstein*, was printed at Bamberg.

Bone-setter, a surgical operator, who attempts by manipulation to restore mobility to stiffened joints, etc. Joints may become stiffened as the result of inflammation, which causes osseous solidification of the joint, or destroys the synovial membrane, or so far weakens and renders useless the ligaments and cartilages that movement is impossible. It has long been known that in some cases mobility can be attained by forcibly breaking down the adhesions; and by keeping up systematic movements the tissues can be encouraged to adapt themselves to the mobile condition. Some striking successes obtained by unqualified practitioners in dealing with obstinate cases have tended to arouse public enthusiasm in certain advocates of 'bloodless surgery.' The defence of the orthodox surgeon however is, that he prefers to investigate thoroughly the causes of immobility rather than to trust to somewhat violent measures which in certain conditions of the joint may do irreparable damage.

Boneshaker, *see under* CYCLES AND CYCLING.

Bo'ness, or **Borrowstounness**, is a seaport of W. Lothian, Scotland, situated on the frith of Forth, 23 m. W.N.W. of Edinburgh. It has no notable public buildings save a fine par. church. It has a wet dock of 7½ ac., and a considerable shipping trade; shipbuilding is also carried on, and the other manufs. include salt refining, soap making, brewing, etc. Coal mines are worked in the vicinity, and some iron is smelted. Antoninus's Wall, known as Graham's Dyke, traverses the par. Pop. 16,000.

Bonet, **Juan Pablo** (c. 1590-1630), Sp. philanthropist, who in 1620 pub. at Madrid a work on the instruction of deaf-mutes. His method, which was probably largely that of Pedro Ponce de León (c. 1520-84), corresponds to what is now known as the 'combined system,' i.e. he used phonetics as well as the manual alphabet. He taught the meaning of nouns by pointing, verbs by action, and the other parts of speech by continual use. Sir Kenelm Digby, who met him in Madrid, states that his methods were most successful. He instructed a brother of the constable of Castile, in whose services he was.

Bonet, or **Bonnet**, **Théophile** (1620-1689), Swiss physician, b. at Geneva; took his degree in medicine in 1643, and practised in Geneva with great success till about 10 years before his death, when, having become deaf, he relinquished practical work for writing. He is best known as having been a pioneer in the science of pathological anatomy, but he also wrote numerous treatises on different branches of medicine and surgery. His chief works were *Labyrinthus Medicus Ectricatus*, and *Sepulchretum Anatomicum seu Anatomia Practica*, 1679. Of this last, a corrected ed. by Mauget was issued in 1700. *See* Nicéron's *Mémoires*.

Bonfadio, **Jacopo**, It. philosopher and historian of sixteenth century, b. at Gorzano, near Salò; educated at Verona and Padua; in 1535 became private secretary to Cardinal Ghinucci at Rome. After leaving the latter, he travelled through Italy for sev. years, and in 1545 became prof. of philosophy at Genoa, of which city he wrote a hist., *Annales Genoveses*, 1528-50. He was executed on a doubtful charge in 1550. His other works include letters, poems, and a translation of Cicero's *Oratio pro Milone*.

Bonfidi, **Edmund**, *see* BONNEFOY.

Bonfire (Early Eng. *bonefire*, Scottish *banefire*), in its original meaning a fire for burning bones, term now used to designate any fire which is lit in the open air, usually on an occasion of national rejoicing. Earlier meanings of the word are, however, still maintained, and it may be applied to a fire for burning bones, a funeral pyre, or a fire in which heretics are burnt. The origin of the lighting of these fires seems undoubtedly to be pagan, since the early Church did its best to stop the custom of lighting fires, which were described as of heathen origin. Nevertheless, sev. Christian festivals came to be

celebrated by the lighting of Bs. In many countries St. John's Eve and St. Peter's Day are celebrated in this way. The great 'B. day' in England is Nov. 5, Guy Fawkes' Day.

Bonga, cap. tn. of Kaffa, Abyssinia, 340 m. S.W. of Debra Tabor. It is a centre of trade.

Bongar (*Bungarus*), genus of poisonous snake in the family Colubridæ. *B. candidus*, the krait, is common to India, and though only about 4 feet in length it is a very deadly reptile.

Bongardia, genus of the order Berberidaceæ which grows in the E. The leaves of *B. chrysogonum* are eaten as salad, and the tubers of *B. ransolfi* are also edible.

Bon Gaultier **Ballads**, the name of a book of parodies of Tennyson, Elizabeth Browning, Macaulay, and others. 'Bon Gaultier' was the *nom de plume* of Sir Theodore Martin (1816-1909) as a contributor to *Fraser's Magazine* and *Tail's Magazine*. In 1856, in conjunction with W. E. Aytoun, he pub. *The Bon Gaultier Ballads*. The name Gaultier is found in *Tableaux*.

Bonghi, **Ruggero** (1828-95), It. author and statesman, b. at Naples. He had to leave that city after 1848 and go to Tuscany, whence he was exiled to Turin for an article against the Bourbons. At Turin he resumed his philosophic studies and his translation of Plato. Accepted a professorship of Gk. at Pavia in 1859. In 1860 he returned to Naples, and threw in his lot with the Carvour party, and some years after became minister for public instruction. He reformed the It. educational system and founded the Vittorio Emanuele Library in Rome. Among his works are a translation of the *Dialogues* of Plato (1880), and *Storia di Roma* (1884).

Bongo, a negro tribe who occupy the land in the basin of the Bahr-el-Ghazal, E. Sudan. They were formerly subjects of the Mahdists. They number only about 100,000, and they are medium in stature and of a bronze colouring. They are clever at iron smelting, etc., which metal forms the currency.

Bonham, co. seat of Fannin co., Texas, U.S.A. It is situated on Bois d'Aro Creek, and has a pop. of 6,000.

Bonheur, **Rosalie Marie**, usually called **Rosa** (1822-99), Fr. artist, b. at Bordeaux. She was descended from a family of Swedish origin and also a family of considerable artistic talent. She exhibited between the years 1841 and 1845 at the Salon; in 1848 she was awarded a medal. Her attention to the study of living animals and her faithful representation of them were the chief reasons for her success. Her international fame dates from her exhibition of painting in 1855. She received the decoration of the Legion of Honour and afterwards became an officer of the same order. After 1867 she only exhibited once at the Salon, in 1899, shortly before her death. Among her more famous pictures may be mentioned: 'Ploughing in the Nivernais,' 1848, in the Luxembourg Gallery; 'The Horse Fair,' 1853, in the U.S.A. (a replica is in the

National Gallery); 'Hay Harvest in Auvergne,' 1865.

Bonhill, tn. of Scotland, in the co. of Dumbarton and 3 m. N. of that tn. It is the bp. of Smollett. Pop. 3,800.

Boni, state in the S. of the is. of Celebes, belonging to the Netherlands E. Indies. It is about 860 sq. m. in area. The inhab. are called Bugis (*q.v.*), and they have a language similar to that spoken by the Macassars. The chief tn. is B., situated on the Macassar peninsula, and is bounded by the gulf of Boni on the E.

Boni, Giacomo (1859-1925), It. archaeologist and architect, b. at Venice. After studying architecture in Venice, he applied himself to European languages, especially Eng., with the object of reading Ruskin. Incurring the displeasure of the Venetian authorities for outspoken criticism of the restoration work on the Ducal Palace, he went to Rome. Later he was asked to advise the pope on the repair of the Sistine Chapel, and in 1898 took in hand similar work on the Forum and became famous for his exploration of the Temple of Vesta. Afterwards studied the archaeology of the Palatine and laboured to enhance the beauty of the old gardens both there and in the Forum.

Boniface, name given the landlord of Lichfield, a character in George Farquhar's comedy, *The Beaux' Stratagem* (1707); hence a name applied to landlords generally.

Boniface, St. (680-754), known as the apostle of Germany, b. at Crediton in Devonshire, his real name being Winfrith. He received a good education for the time, in England, and distinguished himself both by his scholarship and by his ability as a preacher. Rejecting all inducements to remain in England, he became a missionary to Frisia, following the example of many other Saxon monks. His first mission, owing to the opposition of the king, was not successful, but after he had received a direct commission from the pope he set out for Thuringia, but was recalled to Frisia by the death of the king who had opposed him. Here he worked for some years under the direction of the bishop of Utrecht (Willebard). So great was his success that he was consecrated bishop and received special letters of recommendation to Charles Martel. The protection of the Carolingian made his success possible, as he himself owns, and he now started upon a systematic crusade against heathendom, baptising, converting, and breaking down the temples of the heathen. From England he called his great band of missionaries whose aid was essential to his success. In 732 he was made an archbishop. Later he was charged with the reorganisation of the whole Frankish Church, and threw his whole soul into the work before him. He depended upon the support of Carloman and Pippin, the mayors of the palace, and was able to call together the first Ger. council of the Church. He divided Germany into bishoprics as he had already done in Bavaria. He had two great controversies,

one with the Irish monk Virgil, the other with a Neustrian bishop who gave utterance, according to B., to many heresies and who was condemned in 744 with the aid of Pippin. B. now became bishop of Mainz and metropolitan of Germany. The national church probably at his instigation gave its submission to the Rom. see. In 754 he resigned his see and again took up his mission to Frisia, where in the same year he and his companions were assassinated by the heathen they had come to convert. The life work of B. left its mark upon the organisation of the Ger. Church, and while he is not famous as a literary man, there remain to us many of his letters and writings.

Boniface, the name of nine popes;

Boniface I., bishop of Rome from 418 to 422, was elected in the face of some opposition, but recognised by the imperial gov. owing to a breach of faith by his opponents. This recognition, however, did not end the opposition to him, and there was for some considerable time opposition from his rival's faction.

Boniface II. (530-2), by birth a Goth, and bishop of Rome by favour of the Gothic king and the nomination of his predecessor, Felix IV. He only ruled for 2 years. During this short period he attempted to establish the precedent by which he had become pope, but failed in his endeavour to nominate his successor.

Boniface III. was pope for about 9 months, during the year 606. He was recognised as the 'head of the Church at Rome.'

Boniface IV. (608-15) converted the Pantheon at Rome into a Christian church.

Boniface V. (619-25) is cited as doing much to help in the christianisation of England. Bede quotes him as writing letters to various of the political authorities in England. He is supposed to have fixed upon Canterbury as the metropolitan see of England, although Augustine had intended London to become so after his (Augustine's) death.

Boniface VI., elected in April 896, and died 15 days after his election.

Boniface VII., placed on the papal throne in the room of Benedict VI. who had been assassinated. After a very stormy career, he managed to return to Rome from which he had been driven, threw Pope John XIV. into prison, and remained as pontiff from 984 to 985, not quite a year.

Boniface VIII., b. of noble family, and studied canon and civil law in Italy and France. He took part in sev. of the stormy incidents in the career of Henry III. in his quarrel with the barons and the people. He became of great importance in the Rom. Church, and in 1294 he succeeded Celestine V. as pope. His papacy was in great contrast to that of his predecessor. He asserted to the full the spiritual and secular claims of the papacy. By most of the Fr. clergy he was disliked and his policy raised up for him a number of other enemies. The attempt to humble Edward I. failed, but previous to this he had issued the bull *Clericos laicos* which

led to the outlawry of the clergy in England. The Fr. vice-chancellor was sent to arrest him in order that he should be deposed by a universal council. He was ultimately captured at Anagni and taken to the Vatican, where he was imprisoned and died, probably at the age of about 70, 1303.

Boniface IX. (1389-1404), b. at Naples of anct. but poor family. He was made a cardinal by Pope Urban VI., whom he succeeded on the papal throne. He won back the greater part of the papal states to the allegiance of the papal throne and abolished the republic in Rome. He was, for the time, a man of good morals, but has been justly accused of selling offices and of nepotism.

Boniface of Savoy. Eng. archbishop, son of a count of Savoy and uncle to Henry III.'s wife, Eleanor. B. entered the Carthusian order, became bishop of Belley, near Chambéry, 1234. His promotion to the see of Canterbury in 1244 proved so distasteful to all parties in England that he withdrew to Rome in disgust, 1250-52; 1255. B. set out to relieve his brother Thomas, imprisoned for tyranny by the people of Turin; 1256, he took part with the bishops against the king and pope; 1263, joined papal legate in excommunicating the rebellious barons. He died in 1270, while accompanying Edward I. on a crusade.

Bonifacio, a strait separating Corsica and Sardinia. It is 7 m. wide, but navigation is rendered difficult by the numerous small is. The tn. of B., a port, is situated in Corsica on a peninsula. It is difficult to reach, because the harbour entrance is narrow. Exports are oil and wine, and coral fishing is one of the chief industries. Pop. 2700.

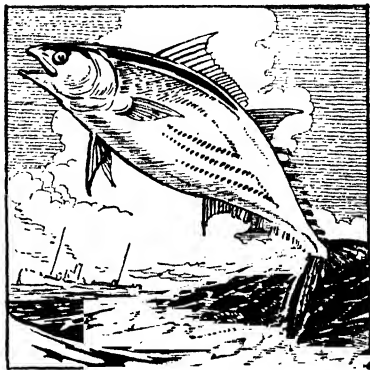
Bonillo, tn. of Spain, 34 m. W.N.W. of Albacete. Pop. 5000.

Bonin Islands, or **Ogasawara Jima**, group of is., N. Pacific Ocean, lat. 26° N., long. 143° E., 700 m. S.S.E. from Japan. They number about 20, but only 10 are of any considerable size. They have been divided into 3 groups; the N. group are called the Parry Is., and those in the centre the Beechey Is., while the S. group are the Bailey or Coffin Is. The whole of them are of volcanic origin. They were discovered in 1639 by Quast and Tasman. In 1827 Capt. Beechey visited them, and took possession of them for Britain, and in 1878 the Jap. reclaimed them. Port Lloyd is the chief port. Pop. 1,500.

Boning, see **BORNING**.

Bonington, Richard Parkes (1802-28), Eng. artist, b. at Arnold, near Nottingham, his father being governor of Nottingham prison. The family settled in Paris, where the son studied art under Louis Francia and Baron Gros. In 1822 he began to exhibit at the Salon, and in 1824 was awarded a medal there. His pictures are distinguished by the purity and brilliancy of their colouring. His fame has grown with time. While much of the best in contemporary Fr. landscape painting may be said to date from Constable's copies of Claude a great deal has to be allowed

to the great influence of B. His 'Henry IV. receiving the Spanish Ambassador' was bought by Lord Hertford for over 80,000 francs, and his 'Grand Canal, Venice' and 'Fishmarket, Boulogne' also realised high prices. He exhibited sev. pictures at the Royal Academy. In the National Gallery are his 'Piazzetta, St. Mark's, Venice' and 'Sunset.' His paintings in water-colour are well represented in the Wallace Collection. He died at an early age as a result of brain fever from exposure to the sun while sketching. See monograph by Dubuisson (trans. 1924).



BONITO

Bonito (*Thynnus pelamys*), acanthopterygious fish of the family Scombridae. It belongs to the same genus as the tunny (*q.v.*), and is allied to the mackerel. The flying-fish serves as its food.

Bonivard, François (c. 1495-1570), the famous 'prisoner of Chillon' of Byron's poem. He was b. at Seyssel, being descended from an old noble family of Savoy. He succeeded his uncle as prior of the Cluniac priory of St. Victor in 1510. Resisting the encroachments of the duke of Savoy, he was arrested and imprisoned. His first imprisonment only lasted for about 2 years, at the end of which time he was released. But he still remained a great antagonist of the duke, and in 1530 he was again arrested and imprisoned. This was the famous imprisonment during which he spent some 4 years underground, and was only released in 1536 by the seizure of the castle by the Bernese, who had revolted and won back Vaud from the duke. The details of his imprisonment as we have them from Byron owe a considerable amount to the imagination of the poet. He became a Protestant shortly after his release, and received a pension from Geneva. He was appointed in 1542 to write an official hist. of Geneva, and his *Chroniques de Genève* were written between this time and his death, although they were not pub. until 1831.

Bonjem, small tn. of Tripoli, N. Africa, situated 150 m. to the N. of Sokna. It is situated in an oasis, and has Rom. antiquities and ruins.

Bonn, city of the prov. of Rhineland, situated on the l. b. of the Rhine, 21 m. S.S.E. of Cologne. Pop. 101,000. The city, which has a new and an old quarter, is pleasantly situated in attractive scenery. The cathedral, which dates from the thirteenth century, is cruciform in plan, and is a fine example of the late Romanesque style of architecture. B. became one of the most important centres of Ger. intellectual activity. The univ. was instituted in 1818 by the king of Prussia, and its fine buildings grew up round the old palace of the former archbishops of B. Its main building was, however, seriously gutted by fire during the Second World War. Other buildings which should be mentioned are the eighteenth-century town hall, the museum of the Academy of Arts; the provincial and municipal museums; Beethoven's house, which has been converted into a museum since 1889; and the castle of Poppelsdorf. The industrial quarters developed on the outskirts of the tn., including the stoneware factories and the Soennecken factory of writing materials and office furniture. B. was called *Castra Bonnensia* in the time of the Romans, and was one of the most important Rom. camps on the Rhine. After being almost destroyed in 1689 by the Elector Frederick III. of Brandenburg, it underwent a siege in the war of the Sp. Succession. In 1717 its fortifications were demolished. The city was occupied by the Fr. at the end of the eighteenth century, but passed into the possession of Prussia after the Congress of Vienna (1815). After the First World War it was occupied (1918-26) first by British, and then by Fr. troops. In the Second World War B. became an objective in the advance into Germany of the American First and Third Armies, and came wholly into their hands on March 9, 1945.

Bonnard, Pierre (1867-1947), Fr. painter, b. at Fontenay-aux-Roses, near Paris. Began life as a civil servant, but soon abandoned an official career for art. He learned under Bouguereau, but the chief influences on his own style were Renoir and Toulouse-Lautrec in colour and drawing respectively. For a brief period he was associated with the symbolists of Gauguin. His most characteristic paintings were of interiors with figures draped or nude, but he also painted a number of landscapes and still-life subjects. In 1940 he was made an honorary member of the Royal Academy. Some of his pictures are in the Tate Gallery.

Bonnat, Léon Joseph Florentin (1833-1922), Fr. portrait-painter, b. at Bayonne; studied in Madrid and Paris. His reputation was first estab. by his 'St. Vincent de Paul taking the place of a Galley Slave' (1866), which was followed by other religious works, such as his celebrated 'Christ Crucified' (1874, Palais de Justice, Paris). Although he also painted

sev. *genre* subjects, his fame rests chiefly on his portraits. Among the most noted are those of Victor Hugo, Don Carlos, Léon Cogniet, under whom he had studied, and Jules Grévy. See Van Dyke's *Modern French Masters*, 1896.

Bonner, Edmund (c. 1497-1569), Eng. bishop, of humble origin; educated at Pembroke College, Oxford. He was patronised by Cardinal Wolsey, and on the latter's death was favoured by Henry VIII., who made him one of his chaplains, and sent him to Rome to press the claims of his divorce from Catherine. He was made bishop of London in 1539. He was in favour of the principle of royal supremacy in Henry's reign, but refused to take the oath of supremacy under Edward VI., and was confined in the Marshalsea prison from 1549 to 1553. He was restored to his see on the accession of Mary, and was conspicuous by his zeal in the persecution of Protestants during this reign. He refused again to take the oath of supremacy on the accession of Elizabeth, and was again sent into the Marshalsea prison, where he died.

Bonne's Projection, in map projection, a method first employed in a rough form by Ptolemy for the second projection of his World Map, and by Bonne in 1752. It was also adopted by the Fr. war depôt in 1803 for the map of France on the scale of 1/80,000, and much used in the last century for continental services. In Great Britain it was used for the old ordnance survey of Scotland and Ireland on the scale of 1 in. to the m., and is also frequently used in atlases. It is a modification of the simple conic, in which all the parallels are divided truly and the meridians are curves passed through these dividing points. The projection is equal area and the scale is along and perpendicular to the parallels. It is not well adapted for countries with great extent in longitude, because the intersections of the meridians and parallels become very oblique—as may be seen at a glance at the map of Asia in most school or other atlases. This obliquity, of course, increases with the distance from the centre, and the defect proved to be so disadvantageous for artillery in the First World War that the tactical maps of the Allies at the end of the war were all planned according to the conical orthomorphic projection of Lambert—a system in which there is misrepresentation of form but no misrepresentation of areas.

Bonnet (Lat. *bonetum*, stuff, thence cap made from stuff), soft cap or covering for the head. It was worn, and so called, in England until the latter years of the seventeenth century, and in Scotland till later. The genuine B. of the Scotch peasants was made of a thick woollen fabric, with no lining; it was of a round, flat shape, generally dark blue in colour, with a red tuft on the summit. It was extremely durable. The glengarry B., which is still worn by Scottish soldiers, rises to a point in front, and has ribbons at the back. Stewarton and Kilmarnock, in Ayrshire, have been noted for the making of Scottish Bs. since very early

times. The use of the word B. as applied to men's headgear has now fallen into desuetude, and the term is applied only to ladies' wear. A B. differs from a hat in fitting closely to the head, and often having no brim. It varies considerably, however, in both shape and decorations, according to the prevailing fashion. The Bs. of straw are mostly made in Tuscany. Formerly a large quantity were made in Luton, but other industries have replaced the hat industry there. From the fact that small landed proprietors in Scotland continued to wear Bs. for some time after their use had been discontinued elsewhere, they were known as B. lairds. The B. of a ship's sail is an additional piece which is now laced on to the bottom of the sail, but was formerly at the top. The term is also used for various protective devices, and a slang name for a gambler's accomplice is a 'bonnet.'

Bonnet, Charles (1720-93), Swiss naturalist and philosopher, b. at Geneva on March 13. His observations and experiments on aphides or tree lice gained for him in 1740 the rank of corresponding member of the French Academy of Science, and 3 years later he became a fellow of the Royal Society. In 1745 appeared his first pub. work, which was called *Traité d'insectologie*, and in 1754 his researches in botany and the results he had obtained from his long work in this subject were pub. in *Recherches sur l'usage des feuilles dans les plantes*. He next turned his attention to philosophy, his eyesight preventing him from further continuing his natural science experiments. His *Contemplation de la nature* was pub. in the year 1764-65. His last work of importance was *Palingénésie philosophique* (1769-70) in which he develops the idea he had already put forward that animal life is continued and perfected in a future state.

Bonnétâble, tn. of the dept. of Sarthe, France, situated 14 m. from Mamers, on the Tripoulin. It has manufs. of boots and shoes, and tanning is carried on. Pop. 3600.

Bonnet piece, gold coin of the time of James V of Scotland. On it was a figure of the king, who was the first king of Scotland to have dates put on coins, wearing a bonnet on his head instead of a crown. This being the origin of the name of the coin.

Bonnet, Théophile, see BONET.

Bonneval, tn. in the dept. of Eure-et-Loir, France, 9 m. N. of Châteaudun at the junction of the Loir and the Ozaune; pop. 4,000.

Bonneval, Claude Alexandre, Comte de (1675-1747), Fr. soldier of fortune. At the age of 13 he joined the army. While serving in the Netherlands under Luxembourg, he was condemned to death by court-martial, and fled to Germany. Entering the Austrian service, he distinguished himself by his conspicuous gallantry. With the Austrian army he fought against France, and also against Turkey. His ungovernable temper, however, led to a quarrel with Prince Eugene, his patron. He was again sentenced to

death by court-martial, but the sentence was commuted, and he was exiled. He offered his services to the Turkish sultan, by whom they were accepted, and he changed his faith, becoming a Moslem and taking the title of Ahmed Pasha. He helped to reorganise the sultan's army. He rendered great services to Turkey during the Russian and Persian wars, and was made governor of Chios. Later he fell under the suspicion of the sultan, and was banished to the shores of the Black Sea, where he died.

Bonneville, Nicolas de (1760-1828), Fr. man of letters, was president of a dist. of Paris from the first days of the Revolution. With Fauchet he brought out the *Cercle Social*, the *Chronique du Jour*, etc. Under the Terror, 1793, he was imprisoned, and later, under Napoleon, he was persecuted. He was among the first Frenchmen to study Ger. literature. His *Nouveau Théâtre allemand* was pub. 1782-5, and *Histoire de l'Europe moderne*, 1789-92.

Bonneville, Lake, extinct lake of the U.S.A. which in a recent geological period extended over a quarter of the total area of the Great Basin, a vast region of inland drainage in the S.W., extending over Nevada, Utah, Oregon, and California. For further details, see GREAT BASIN.

Bonney, Thomas George (1833-1923), Eng. geologist, b. at Rugeley; educated at Uppingham and at St. John's College, Cambridge. In 1877 he was made prof. of geology at Univ. College, London. He was president of the Geological Society, 1884-86, and secretary of the Brit. Association, 1881-85. His works include *The Alpine Regions*, 1868; *The Story of Our Planet*, 1893; *Volcanoes*, 1898; *The Present Relations of Science and Religion*, 1913; *Memories of a Long Life*, 1922.

Bonnier, Gaston (1853-1922), Fr. botanist, b. in Paris. Prof. of botany at Paris Univ., after becoming prominent towards the end of last century, when he proved experimentally the synthesis of lichens. His *La Flore de la France et de la Belgique* is the leading work of its kind in both those countries. (Eng. trans. and adaptation by Ethel Mellor, 1925.)

Bonny, tn. in S. Nigeria, W. Africa. It is situated on a creek on the E. side of the R. B., near the mouth. It is swampy, and a most unhealthy tn. It has a large trade in palm oil. The R. B. is one of the delta mouths of the Quorra. Its anchorage is good and safe. Pop. 6,500.

Bonomi, Giuseppe (1739-1808), Brit. architect, b. at Rome of It. parentage. He settled in England in 1767, was made an associate of the Royal Academy, and in 1804 was created honorary architect to St. Peter's at Rome. He was largely responsible for the revival of the classical style of architecture in England. He was the architect of Langford Hall in Shropshire, and Dale Park in Sussex.

Bonomi, Ivanoe (b. 1873), It. politician b. at Mantua, member of the Reform Socialist party. Held sev. Cabinet posts between 1916 and 1922, in 1920 signing

with Count Sforza the treaty of Rapallo which, *inter alia*, gave Fiume its independence. With the advent of Mussolini he retired from politics, but returned in 1944 to succeed Badoglio as Prime Minister. He resigned in 1945.

Bononcini, Giovanni Battista, and **Giovanni Maria**, *see* BUONONCINI.

Bononia, in Rom. times the name given to the cities now known as (1) Boulogne-sur-Mer, a port of France, and (2) Bologna in Italy.

Bonpland, Aimé Jacques Alexandre (1773-1858), Fr. traveller and botanist, b. at La Rochelle on Aug. 22. He studied medicine, and for some time served as an army surgeon. In 1799, together with Humboldt, he undertook a journey of exploration through Mexico, Columbia, and the dist. round the Amazon. The result of this journey was the collection of about 6,000 plants, which on his return to Europe he proceeded to explain in his *Plantes équinoxiales*. Later, he explored Central America. Among his works may be mentioned *Monographie des Melastomacées*, 1806; and *Description des Plantes rares de Navarre*, 1813.

Bonsignori, or Buonsignori, Francesco (1455-1519), It. painter, b. at Verona. Comparatively little is known about his life. Many of his works remain at Mantua and Verona, and some are to be found in the prin. European galleries. Vasari declares him to have been a pupil of Mantegna. His best-known works are paintings of the Madonna with saints at Verona, and portraits at Florence. *See* Vasari's *Lives of Italian Painters*, 1895.

Bonstetten, Albert von (c. 1441-1504), Ger. monk and author, a member of the Einsiedeln monastery of the Benedictine order. His numerous works include: *Description of Switzerland*, 1836; *Banishment of Justice and other Virtues*, 1470; *History of the House of Austria*, 1491; and *Account of the Wars of Charles the Bold*, 1477.

Bonstetten, Charles Victor de (1745-1832), Swiss writer and publicist, b. at Berne, of Fr. descent. He was educated at first at home, but afterwards at Leyden, in France, and in England, where he became a friend of the poet Gray. On his father's death he entered political life, and became a dist. governor. But his ideas were too liberal, and after the taking of the Bastille he had to retire. In 1793 he again became a governor of the It.-speaking part of the republic, but again in 1798 had to retire because of his political ideas. He finally settled in Geneva in 1803, where he died. One of his greatest books was the study of the effect of climate upon different nationalities, *L'homme du midi et l'homme du nord*, 1824. Other works are *Recherches sur la nature et les lois de l'imagination*, 1807; *Études de l'homme*, 1821; *Pensées diverses*, 1815.

Bontempelli, Massimo, It. author, b. at Como, Italy, 1878. This leader of what was really a twentieth-century literary rebellion in Italy was at first an extreme conformist. He started out as a prof.

of letters and a convinced follower of the classic methods of Carducci. In this period he wrote his *Sicilian Odes*, inspired by antiquity. Then he became a futurist and humorist. His book, *Lady of my Dreams*, is composed of short stories which relate imaginary adventures in an ultra-modern world, but with an infinite care for realism in their details. But his chief title to fame in his native land is that he was the founder and director of the review *900*. In this he vigorously preached reaction against academic art and sentimentalism.

Bonus, sum paid to shareholders in a joint-stock company as addition to ordinary dividends. It is generally given out of accumulated profits, or the profit from some exceptional transaction, when it is not considered advisable to raise the ordinary dividend. As used by insurance companies it is an amount added to the original amount of the policy by a distribution *pro rata* of the accumulated profits, or of the surplus. In a more general sense B. is used to mean any payment more than what is due.

Bonvin, François (1817-87), Fr. artist, b. at Vaugirard. Most of his pictures have for their subjects incidents in the life of the working people with whom he had come into contact. Among his best-known pictures are 'L'Ecole d'orphelins,' 'La Charité,' 'La Basse Messe,' and 'La Cuisinière.'

Bony Fishes, technically known as Teleostei, the largest and most important sub-class of fishes. They are to be found in fresh, salt, and marsh water, and their bodies vary in shape from the piscine and flat to the snake-like. The features which all forms bear in common are: a bony skeleton with vertebrae, a skin covered with soft light scales, an anus, optic nerves which cross without fusion, and the absence of a spiral valve in the intestine. They frequently possess an air-bladder, and the eggs usually develop into larvae. The Teleostei have been divided into 6 groups; the *Acanthopterygii*, or spiny-rayed fishes, as the perch, mackerel, and blenny; the *Pharyngognathi*, like the above in some respects, but having only some of the rays of the fins spiny and the lower pharyngeal bones fused, as the wrasse; the *Anacanthini*, with soft fin-rays, as the cod; the *Lophobranchii*, with tufted gills, as the pipefish and sea-horse; the *Physostomi*, with soft fin-rays, open duct to swim, and bladder, as the salmon, herring, and eel; the *Plectognathi*, with pectine gills bones of upper jaw movable, as the trunk-fish, globe-fish, and porcupine fish. *See* A. C. L. Günther, *Introduction to the Study of Fishes*, 1880; G. A. Boulenger, *Systematic Account of the Teleostei*, 1904.

Bonyhad, tn. of Hungary, situated about 148 m. from Budapest, in the co. of Tolnu. It trades in corn, wine, and tobacco. Pop. 8,000.

Bony Pike, Billfish, or Garfish, name applied to the garoid fishes of the family Lepidosteidae. They have elongated snouts, their bodies are covered with

thick scales, and in habit they are predaceous. *Lepidosteus osseus* is a species commonly found in fresh waters of N. America.

Bonze (Jap. pronunciation of *fan sung*, member of a monastery), member of a Buddhist monastery. The Jap. form is *bonzo* or *bonzi*. The word used to be applied by Europeans to any priest in Japan and China.

Booby, species of bird which is closely connected with the gannet, and receives its humiliating name from the ease with which it allows itself to be captured. With the gannet it forms the genus *Sula* of the family *Steganopodidae*, but it differs from the gannet in breeding on trees and bushes, and in having no feathers on its throat and lower jaw. It is persecuted by the frigate or man-of-war bird, which belongs to a different genus of the same family, and is compelled to give up to it the fish which it has captured. The birds are cosmopolitan except on cold shores; *S. cyanops* comes from the S. Pacific, and *S. australis* from the S. seas.

Booby Island is situated in Torres Strait, off Queensland, Australia. It is dangerous to navigation, and a lighthouse has been built here.

Book, name given to a literary production, usually one vol., and also to sev. if forming a single work. The word has been variously derived, but the derivation which presents least difficulties is that from A.-S. *boc*, meaning a beech-tree, supposedly from the original use of beech-bark for writing. Almost as far back as it is possible to trace any form of civilisation in the world, it is possible also to trace the existence of Bs. of some form or other. The clay tablets, covered with cuneiform inscriptions, on which we find the decisions of the law courts of Babylonia, have a right with the printed matter of the present day to rank as Bs. More in the direct line of descent are the papyrus rolls of early Egypt, covered with the hieroglyphics of the priestly Egyptians, and of enormous antiquity. The fashion thus set of recording events on papyrus was one which remained in existence for a long time, and as late as the thirteenth century papyrus was still used as a medium for writing, although the earliest extant papyrus goes back to some 4000 years B.C. The Gks. gave to the papyrus which they used the name of *βιβλος*, from which is derived the word Bible. The supply of papyrus was at one time found to be declining, and the prepared skin of sheep and goats was brought into use as a substitute, proving so successful that it was only replaced later by the invention of paper, an invention which was introduced from the E., and to which the name of papyrus was transferred. The method of preparing the skins was traditionally ascribed to Eumenes II., king of Pergamum (or Pergamus); hence the name parchment, from Lat. *pergamena* (*charta*), paper of Pergamum. During the period of the predominance of papyrus the usual form of B. was the long rolls wound round

a stick, but with the commoner use of parchment the B. form as we know it at the present time began to be used. With the invention of printing the form of Bs. did not undergo any great change at the beginning. The type used was similar to the calligraphy which had been in common use up to that time. The Bs. were first printed without title-pages, and the information concerning the printer and the place where the B. was printed was given at the end of the B. It was not until the beginning of the sixteenth century that Bs. began to be printed with a title-page and the name and address of the printer, together with the date of printing. The Bs. produced in the early days of printing were large, and owing to the method of binding heavy as well. During the sixteenth century the introduction of a smaller type, and the reduction in the size and weight of Bs., did much to popularise them, and many Bs. during this period were brought within the reach of ordinary people. The seventeenth century saw during its early days a falling off in the printing of Bs., which increased rather than lessened in price. Towards the end of the century, however, Bs. began to improve in printing, although they did not cheapen in price. The eighteenth century saw a great improvement in the printing and binding of Bs., and the prices of these Bs. again became reasonable. Bs. were often pub. by subscription, and then the price was high. Illustrations began to appear in them, and it is during this period that we get the beginning of the popularity of the novel, which was usually printed in sev. vols. The price of Bs. during the greater part of the century was fairly uniform, and Bs. could be bought by all classes save the very poor, but towards the end of the century the prices again rose. The nineteenth century saw a vast improvement in every respect. Bs. were well bound, well printed, and in many cases well illustrated. The publishing of Bs. at popular prices began, although Bs. which were printed cheaply were as a general rule not printed, nor yet bound, well. The many inventions of the century, however, helped on the publication of Bs.—they were able to be obtained by every one; but the problem of the good B., well printed and well bound, at a cheap price, was one of the problems which were solved during the early years of the twentieth century.

Bookbinding, process whereby the leaves of books are bound together in such a manner as to keep them in order and protect them from injury. It may be said to have begun when the method of making books from strips of parchment wound round rollers at each end was superseded by the method of fastening leaves together at the back and placing the so formed book between covers for protective purposes. Before the days of printing, as early as the sixth century, the monks had carried the binding of MSS. to a very high plane. They bound the MSS. between boards, which were afterwards decorated with

metal and jewels. This was known as the Byzantine style of binding. The majority of the books so bound were destroyed by people seeking for gems that were supposed to be hidden in their covers, which were made of wood of great thickness. Then between the tenth and fourteenth centuries the monks of England, having copied and improved the designs of books brought from the E., became the foremost binders of Europe. The binding of books was now done by the aid of leather stretched over the boards and decorated with the impress of small stamps bearing conventional designs.

But the introduction of the printing press gave a great impetus to the trade of B., and as the number of books increased so the office of bookbinder became separated from that of printer. This, together with the introduction into Venice from the E. of the use of gold leaf in the decoration of bindings, caused the end of the fifteenth and beginning of the sixteenth centuries to be one of the finest periods in the history of B. At this time morocco leather was first used, and with the aid of fine, delicate tools for impressing designs on covers, the result was the foundation of an exquisite art for the decoration of bindings. Venice was the seat of this rich ornamentation, and the distinct character of the designs originated there gives rise to the Venetian pattern of tool. Some of the most celebrated patrons of the art in Venice were Tommaso Maloli, Aldus Manutius (*q.v.*), founder of the Aldine Press, and Jean Grolier of Lyons, sometime treasurer to the duchy of Milan. When Grolier returned to France, he had his books bound under his own supervision in such a manner that they cannot be equalled even to-day in beauty of design or in excellence of workmanship. The Fr. school of binders, led by Nicolas and Clovis Eve in the sixteenth century. Le Gascon and du Seuil in the seventeenth, and the Padeloup and Derôme families in the eighteenth century, ably followed up the impulse given in France by Grolier, and kept in unrivalled until the end of the eighteenth century. In Germany the books were usually bound in pigskin, vellum, or calf; the latter being preferred for its softness and smooth surface and its great advantages for blind-tooling, i.e. the impression of designs without the use of gold.

In England, however, the men who stand out pre-eminently are of comparatively recent time. While we may mention Thomas Berthelet, binder to Henry VIII., and John Gibson in the reign of James I., yet chief notice must be paid to Samuel Mearne, binder to Charles II., who originated the 'cottage' style of ornamentation. In the eighteenth century Robert Harley, earl of Oxford, had books bound in red morocco with centre panels surrounded by a broad tooled border, so founding the Harleian style. Other names to be noted are Baumgarten and Benedict, Kalthoerber (credited with the introduction of painted edges, though

according to Zaehnsdorf he rediscovered the secret if it had been lost, for it had certainly been done in the sixteenth century), and Staggemeir. At the end of the eighteenth century Roger Payne used original artistic tools of his own design, always finishing his bindings in accordance with the character of the book. These were followed by Lewis, Mackenzie, Hayday, and Zaehnsdorf. After a period of stagnation and imitation an artistic revival in printing at the end of last century owed its inspiration to William Morris, though the virtual founder of the modern school of binding was T. J. Cobden-Sanderson, of the Doves Press and Bindery. Later names that may be mentioned are Douglas Cockerell, a pupil of Cobden-Sanderson, Charles Ricketts, Miss E. M. MacColl, and others.

Modern Divisions.—Large eds. of books are covered with cloth by machinery at a very quick rate. Since this process differs materially from that of leather binding, the ordinary cloth binding should be described as casing, and the term binding reserved for the process when the boards are attached to the book before covering. In casing the boards are covered and then glued to the book. Nearly all branches of B. to-day can be performed by machinery, but we may first describe the various operations of handicraft B. before describing modern machine methods, because these latter have been evolved from the handicraft processes.

Folding.—Books are usually received from the printers in sheets which require folding. Each sheet is numbered with a signature. From the number of folds in a sheet a book is known as a folio, quarto, octavo, duodecimo, etc. Folio implies 1 fold down the centre, or 2 leaves to the sheet. Quarto refers to sheets folded again across, making 4 leaves to the sheet. Similarly, octavo means 8 leaves to the sheet. For folding by hand, the only instrument used is a folding stick, made of wood or bone, shaped like a paper-knife.

Gathering.—When the sheets have been folded into sections, then they have to be gathered into books. The usual way of gathering by hand is by laying piles of sections on a long table, a section being taken from each pile in turn. After gathering, the book must be collated, i.e. looked through to see that there are no sections misplaced or pages out of place.

Sewing and Stitching.—Hand-sewing is done on a press which has a crossbar from which are suspended vertical lay cords. These cords are then fastened to keys. Through small holes in the backs of the sections the threaded needle is passed round these cords, so fastening the section to the cord. The sewing thread is continually joined up, so that it is continuous through the whole book. When the back has been sewn in, then the sewing thread is merely passed up through the centre of the section and over the binding cord.

Trimming.—Most books are now bound with cut edges. In these cases, after

sewing up, the book is placed either in a press and cut with a plough, or as is the case with large outputs, in a guillotine. A guillotine consists of a bed upon which the book is placed and adjusted by gauges, and securely held down by a press. A knife then descends which cuts the edge accurately at the places which have been marked with compasses. When the fore-edge has been cut, the bottom and the top may be treated in the same manner.

Gluing Up.—The books are now knocked up until they are square, and they are then placed between gluing boards, and a hot coating of glue, which is not too thick, is spread over the back; the object of this is to aid in the holding of the sections together, and to make the back firmer to withstand the rounding and backing processes.

Rounding.—The trimmed books have now to be rounded. The purpose of this is to prevent the back sinking in. The book is taken when the glue is not quite dry, or the glue is moistened slightly. The book is then pulled into a round shape with the left hand and hammered with the right until it takes a rounded form. This is performed on both sides of the book and requires great care. Not all books are rounded, some having 'flat' backs.

Backing.—The book has now to be hacked, or grooved, so that the boards may turn on them as on a hinge, and may fit closely against the sides. Therefore, according to the thickness of the covers, the groove must be made deep or small. The book is placed between 2 backing boards with the back slightly projecting, and the book adjusted until the rounding is even and the head and tail seen to be rectangular. The whole is now fixed in a press in such a way that the back will fall outwards, forming a sharp groove. It is then hammered into position on both sides.

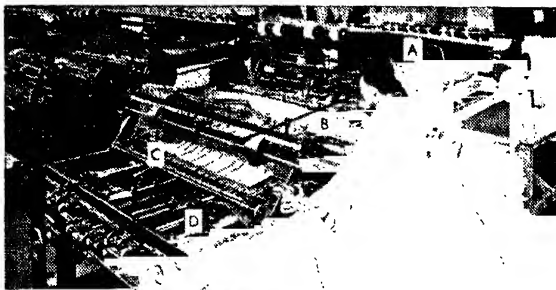
Decorating of Edges.—Ordinary cloth-cased books have either plain trimmed edges or are deckle-edged, i.e. rough and uncut. But as in the case of leather-bound books the edges may be decorated in a number of different ways, to prevent the soiling which must happen with white edges. The edges may be sprinkled with spots of one or more colours. A simple sprinkling of one colour is obtained by letting drops of the paint fall from a brush rubbed on a fine sieve. When two or more colours are used then sand is spread over the edges to keep some portions protected from the colour. Again, edges may be coloured plainly, in which case the colour, mixed with water, is spread over the edges with a sponge or brush. One of the finest methods of decorating edges is that known as marbling. This is a special branch of the trade and depends upon the fact that colours mixed with ox gall will float upon a sized surface, and a colour containing more gall will force the first off. The smooth edge of a book will take these colours up, so the marbling is prepared in a trough and the edge of the

book dipped in it diagonally from corner to corner. This must be done before the book is rounded, or if after, then the book must be knocked back for the process. There are many recognised varieties of design in marbling, the commonest of which is comb or feather marbling. The most elaborate system of decoration is gilding. This is performed by placing the book in a press and scraping the edges smooth with a steel scraper. A mixture of black-lead and glair—white of egg beaten to a froth in water—is then brushed over the edges, and when this is dry the gold leaf is laid on the edge from the gold cushion to which it has been transferred from the gold-leaf book with a gold knife. The gilder then polishes the book-edge with a highly polished agate or bloodstone.

Casing.—A lining of mull (gauze) having been laid on the back of the book to strengthen it, the covers are now prepared from strawboards, coloured cloth, and stiff paper for the back. After being cut to the size required, the cloth is glued carefully and the backing paper and boards laid on; the edges of the cloth being cut at the corners, to prevent thick folds when it is turned over the boards. After these covers have been finished, they are pasted to the books and pressed, after which the cloth-cased book is ready for use.

Leather Binding.—With leather the process is different in most cases. Although sometimes the leather covers are made separately and placed on the book complete, yet the proper method of binding is that by which the covers are built up around the book. To the book in the state already described under the decoration of edges, head bands are added of vellum or calgut covered with silk or cotton, or of calico over cord. The purpose of these is to prevent too great a strain coming on the book when it is being taken from a shelf. Bands—5 as a rule—of leather are now pasted or glued on the backs of the books. The mill- or straw-boards are fastened to the book by lacing the sewing lay-cords through the boards, or inserting in the thickness of the boards (i.e. split-boards). In the case of books which have a flexible back, the leather is fastened directly on to the book, and it consequently adheres to the back of the book, although it is flexible enough to allow of the book opening.

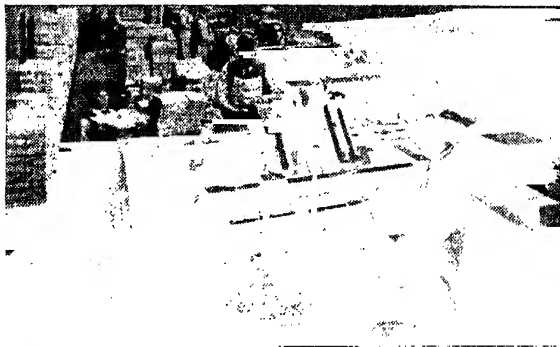
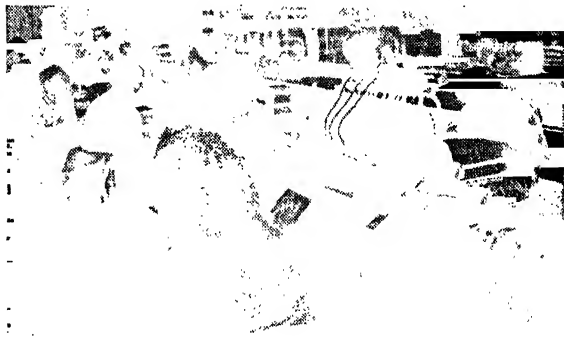
Coverings.—Bound books are covered with either split sheepskins, sheepskins, morocco, or any other leather, parchment, vellum, cloth, velvet, and imitation leather. Special processes are required for each of these. Those bound in leather may be either bound in whole leather, or half bound, having the corners and back made of leather and the sides of cloth or paper. The third type is the limp type, which has the cover flexible and pasted directly to the back of the book. After the covering has been put over the boards the end papers are pasted down to the boards and the inside covered with paper.

**FOLDING**

A, Flat sheets fed automatically.
B, C, First and second folding rollers.
D, Final folding rollers, below which the folded sections can be seen.

SEWING

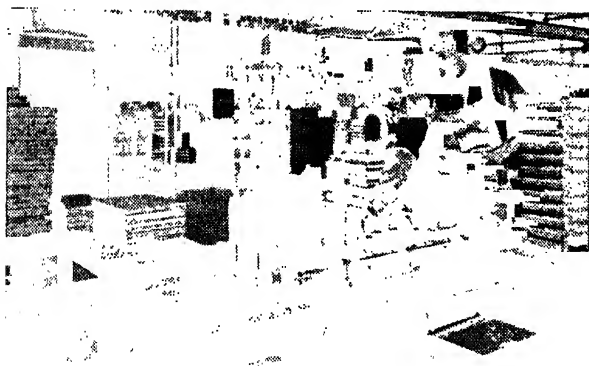
The operator is placing in the 'saddle' a section which moves forward to be sewn to preceding sections. The operator in the rear is separating the sewn books.

**TRIMMING**

The edges of sewn books are cut on the 'continuous trimmer' to the required size. Here the operator is feeding them into a shoot, whence they are passed below a vertical knife to cut the fore-edge. Two horizontal knives cut head and tail.

BLOCKING

The press imprints from a brass stamp the title or design on the binding-case in ink, gold leaf, or metallic or pigment foils.

**CASING-IN**

A coating of paste is applied to the sides of the book which is pushed up into the binding-case, the back of which has been rounded by the same machine.

**EXAMINING
AND
WRAPPING**

After pressing in hydraulic presses, the books are examined for faults, then wrapped in a dust-jacket.



Embellishing.—When small ornaments are used and made up into design, it is known as hand-finishing, and when a large design is used then the process is known as blocking. In either case the tooling may be blind or gold. Gold tooling is performed by pressing gold leaf on to a specially prepared surface and brushing off the gold leaf not stamped on. Blind-tooling is merely an impression on the leather or other cover, without any colour whatsoever. Blind-tooling is sometimes termed antique or monastic tooling.

Bible Bindings are largely in leather, and offer facilities for a display of taste on the part of binders, owing to the custom of having rounded corners, limp, soft corners without flaps, or yapp—soft with flap—covers, specially gilded edges, and tasteful linings for the covers.

Modern Machinery for B.—Automatic machines now play a leading part in the production of books. For pamphlet binding, web and rotary type printing presses now do all the work of folding. One machine will now do all the work of assembling the sections, gluing the paper cover and trimming and cutting the edges. There are also, *inter alia*, automatic case-making machines; an automatic inker for printing on the covers; a stamper with rolled-gold leaf attachment for impressing titles and designs on the case; a three-knife trimmer for edge-trimming and cutting; a machine for pressing the leaves preparatory to stitching; and a casing-in machine for fastening the book to the covers.

Case work now embraces almost all the novels, travel books, etc., which are produced in great quantities; but the result often means books of less strength. Such books are printed so that they may be easily folded into sections with a definite number of pages to each, and the folding is done by special machinery which may take a 64-page sheet, slit and fold it into 4 sections of 16 pages each or 2 of 32 pages each, delivering them from the different parts of the machine at seven thousand sheets an hour. Each section bears a 'signature' to facilitate rapid gathering and collation during 'making up,' and the gathering, too, is often done by special machinery. After the sections are sorted, they are thread-sewn by machines, sometimes over 2 or 3 tapes for reinforcement, and are then ready for rounding and backing; the latter process is to give a nicely rounded effect to the back and to the fore edges of the book. 'Rounding' is related to the sewing and is intended to overcome the difficulty of the increased back-space caused by the threads, and is now generally done by a rounding machine. The covers of these case-work books are made separately from the books themselves, and generally by a case-making machine. The term 'case' refers to a cover made separately and into which the trimmed, rounded, backed, and mull-lined book of sections is glued by means of the end-papers. The making of the case and the lettering and tooling are done apart from the un-

bound book, and 1000 cloth cases an hour can be turned out on some of the machines now in use. Whatever lettering or tooling is required is also done by machinery, in a blocking press by which gold, metallic or pigment folios, or ink, are impressed on the case. A good many cases are printed or blocked in colours as well as gold-blocked, although keen competition has lately modified the too lavish use of gold leaf. The cases are applied to the books in a casing-in machine which glues the end-papers on the sides, and pushes the book into the case, the back of which may have been rounded on the same machine. Demand for cheap issues of standard or classic literature has resulted in some popular libraries being almost entirely produced on one huge machine, linked together and operated by different classes of workers at different points. This means a saving of time and the production of a very fair ed. at a small price. The majority of commercial books could not be produced on one machine, but there are single machines used to-day which require only slight assistance from other machines in order to turn out counter bill books; but it is a highly specialised branch of B. and of course results in the production of articles retailable at a very low price. The miscellaneous book-binders—that is, those who make memorial books, diaries, and books which are intended to stand good wear and books with highly decorative bindings—do not rely much on machinery. Indeed, the development of modern machine processes for mass production of cheap literature or of the low-priced commercial book goes hand in hand with the development of high-class bindings and decorative work, especially in Germany and France.

Ordinary Business or Commercial Books.—The sewing of books which are intended to last for a considerable time and which are well bound is still done usually by hand; but a good deal of the sewing of most other books is now done by a book-sewing machine, chiefly with tape supports. The style of binding usually adopted for thread-sewn books, like common bill books, is 'quarter-binding,' which consists of boards with a coloured paper finish and cloth up the back; stout straw boards are glued on the end-papers, strips of cloth up the back, and the books are trimmed round. But superior quarter-bound books, after being sewn, are trimmed in a guillotine; the backs are then well glued, and before the glue is set the back and fore edge are nicely rounded. This operation is now frequently performed by a rounding machine. Before the covers are put on, the backs are strengthened by adding cloth or leather strips—leather or imitation leather is generally used for covering the back, and cloth or marbled paper for the sides; and these are 'turned in' to give a more finished appearance than is possible with the cheaper bindings, the result being that no boards are visible. The make-up of a half-bound book is superior to that of a quarter-bound book in every

way; quarter-bound books are always fitted with flexible backs, but the back of a half-bound book, whether an account and general commercial book or any other, is firm and substantial, and when the book is open there is an air space between the leaves and the cover back, which space is called a 'hollow' or 'open' back and ensures durability. Half-bound books have leather corner pieces in addition to the leather back, and the covers are heavily built; the end-papers at beginning and end consist generally of highly decorated 'marbled paper.' The marbling of account books is an elaborate process done through a special marbling bath or trough; but though the general principles of marbling are the same for all bindings, there is a variety of styles, each requiring a somewhat different method. In large binderies a marbling machine is brought into service for the colouring of book edges. Sometimes, instead of being marbled, edges are simply 'sprinkled,' a less costly but not so attractive or finished process. For large quantities of books, sprinkling is done by a mechanical sprayer. It may be noted here that library books have their marbled or sprinkled edges burnished, the process being effected by a burnisher, generally in the form of a specially shaped agate in a wooden holder. Russia leather bands are 'laced' on to some types of full leather bindings, but only for books which are for exceedingly long currency. When once the covers are fixed, the books are sent to be 'finished' and 'polished up,' and to have the lettering and ornamentation added to the backs and sides. The lettering and marking tools are of brass; those for rolling are circular, with the design cut out of the circumference and mounted, and they revolve as the tool is played forwards and backwards. The leather of the cover is sponged over with glair, and, when dry, gold leaf is applied and finally the cover is given a coat of varnish. This completes the whole operation of binding.

See J. W. Zaehnsdorf, *The Art of Book-binding*, 1903; D. Cockrell, *Bookbinding*, 1905, and *Some Notes on Bookbinding*, 1929; G. D. Hobson, *English Binding before 1500*, 1929; D. Leighton, *Modern Bookbinding*, 1935; A. J. Philip, *The Business of Bookbinding*, 1935; J. S. H. Bates, *Bookbinding for Schools*, 1941.

Book-clubs. There are various kinds of B.: for the purchase and reading of various books, for the printing of books in connection with a certain subject or study, and for the sale of books to members. Formerly many clubs used to be formed for the purchase of the best works of the day as they issued from the press, and for the distribution of them in turn among the members. The books thus bought were sold annually, and the proceeds carried forward.

Another kind of B., for the printing of books, still exists in this country and the U.S.A. As first founded, they were largely convivial clubs, holding dinners at intervals. Each member was bound to defray the cost of reprinting as many

copies of some scarce work as there were members in the club; the chairman's copy was generally printed on vellum. The oldest of the B. is the Dilettante Society, which dates from 1734; another very anct. club is the Cymmrodorion, or Metropolitan Cambrian Institute. The first B. which was carried on after modern methods was the Roxburghe Institute, which was instituted in 1813. Other famous B. are the Bannatyne Club, founded by Scott in 1823; the Maitland Club; the Abbotsford Club; and the Camden Society.

The B. as it is known to-day is a scheme for supplying to enrolled members special eds. of new books at regular intervals. The idea was put into being in a large way in the U.S.A., the Book of the Month Club, formed there in 1926, achieving eventually huge circulations. It was quickly followed by other Bs. in the U.S.A., notably the Literary Guild which also has a vast membership. In England the Book Society was formed in London in 1929, its committee of literary critics selecting each month for the society's members a choice of one new book and 'recommending' sev. more books. The chosen book and the recommended books are made available for sale to members at the same time and at the same price as the ordinary ed. is first pub., and a four. is given to members. Specialised Bs. followed with certain variations, notably political and religious Bs., and a variation of the purely literary B. was instituted in 1937 by Readers Union, which provides its members each month with a special ed. of a book which has been pub. one year or more, the price to members being lower than that of the regular ed. Among other Bs. operating with a large membership on similar lines are World Books (The Reprint Society) and Foyle's B. There are also sev. of these 'reprint' Bs. in the U.S.A.

Book-collecting. It is axiomatic among book-collectors that the value of a library must depend almost entirely upon the skill of the particular collector. B. may assume many forms, but there ought to be some central idea dominating the bringing together of a mass of books, coupled with the adoption of some method of classification. Some collectors are attracted almost solely by the rarity of a book, others by the age; yet others by the lure of a first or early ed., by the splendour or tastefulness of the binding, while some desire to bring together as many books as possible on certain specific subjects either for their own edification or with a view to ultimate transference to the public. B. in the true sense must be distinguished from the formation of a public or working library. Finally, a book-collector should not be a 'bibliomaniac,' or person who, regardless of its points, collects, yet never reads, any book that happens to strike his fancy. An excellent list of rare, curious, and valuable books, compiled by a bookseller who was evidently anything but a bibliomaniac, is to be found in *A Journey Round the Library of a Bibliomaniac*, by Wm. Davis, 1821. It is often said that

the element of rarity is over-estimated by book-collectors. In this connection it is not far from the truth to assert that rarity does not depend on the number of copies originally printed, but rather on the existence or otherwise of the belief that any particular book will always be easily procurable. An illustration of this, given in Slater's *Library Manual*, is furnished by the celebrated 'Elzevirs,' or books printed by Louis Elzevir of Leyden, who flourished in the sixteenth century. Although the market was for that period flooded with 'Elzevirs' they never became common, and though the vogue of 'Elzevirs' has fluctuated, they are almost as diligently sought after as ever. B. in the modern sense is generally said to have originated in the public-spirited action during the Tudor period, after the dissolution of the monasteries and the plundering of the monastic libraries, of Archbishop Parker and Sir Robert Cotton, who made it their business to rescue as many of the books as possible. A number of modern collectors owe their treasures to the purchase of old libraries belonging to private owners. The tasteful bindings of Grolier (*see also* BOOKBINDING) and other Fr. and also It. bookbinders which appeared after the Renaissance, probably added a stimulus to a form of B. Impetus was given to B. by the introduction from Holland towards the end of the seventeenth century of the custom of selling old books by auction, and the hobby of B. quickly became fashionable. Prices have fluctuated from time to time. Gk. and Latin classics, even those of the Elzevir and Aldine presses, fell in value in the course of the nineteenth century. The close of that century, however, saw a rapid increase in the prices of specimens of early printing, illuminated MSS., first eds. of Eng. classics, and the earlier Fr. and It. printers. Caxton's, however, have more than held their own. Slater in his *Manual* of 1884 prices copies at from £100 to £500. In the *Book Prices Current* for 1912 the *Canterbury Tales*, printed by Caxton about 1478, was priced at £905; while, in 1926, J. Gower's *Confessio Amantis* a first-ed. Caxton, went for \$20,000 (£4000). Some of the most celebrated sales held in this country include those of the libraries of the duke of Roxburghe in 1812 for £23,400; Wm. Beckford (author of *Vathek*) in 1823 for the record price of £89,200; Richard Heber in 1834-7 for £57,500; the earl of Sunderland in 1881 for £56,580; the earl of Ashburnham in 1897-8 for £62,700; and Lord Amherst of Hackney in 1908-11 for £34,878. The Huth library, formed by Henry Huth (1815-78), and dispersed in 9 portions, 1911-20, realised—apart from some important vols. disposed of otherwise than by auction—£250,566. The Britwell Court library, which, after passing to Mr. Christie-Miller, was sold in batches 1916-27 (not all by auction), fetched far more—is said to have fetched altogether £612,145. The second decade of the twentieth century was marked, in the

Eng.-speaking world, by a craze for first eds. of modern authors. In America there was a huge sale extending from Nov. 1923 to Mar. 1924, when the library of John Quinny, mostly modern first eds., fetched \$226,351.35 (about £45,270). In 1929 £160 was paid for a copy of the first ed. of John Galsworthy's *Man of Property*. The largest price ever paid for a single book at an auction in this country was £16,000, in 1948, for a fourteenth-century manuscript psalter illuminated for the wife of King John of France, from the library at Florence of Baron Horace de Landau. £15,400 was given by Dr. A. S. W. Rosenbach on Apr. 2, 1928, for the original MS. of 'Lewis Carroll's' *Alice's Adventures Under Ground* (pub. as *Alice's Adventures in Wonderland*) with some letters from the author to the original of 'Alice'. The Louterell Psalter, formerly in possession of the Weld family at Lulworth Castle in Dorset, was acquired in Feb. 1929 by J. Pierpont Morgan, jun.—for the purpose of saving it from being withdrawn by its owner from the Brit. Museum and sold; Mr. Morgan paid £31,500 for it. He also acquired from the same ownership the 'Bedford Psalter'—a newly discovered one—for £23,000; also for the benefit of the Museum. These MSS. became the property of the museum on payment of these sums. His father, J. Pierpont Morgan, sen., on his death in 1913, left a library of about 25,000 vols., valued at \$7,500,000, for the use of the people of New York. San Gabriel, California, possesses a library bequeathed by Henry E. Huntington, containing an immense collection of Shakespeariana. For full information as to prices, *see* the ann. vols. of *Book Prices Current* and *Book Auction Records*. As to technical appellations and marks by which the genuineness of old books may be tested, *see* Slater's *Library Manual*. *See also* R. B. McKerrow, *An Introduction to Bibliography for Literary Students*, 1928; J. Carter (ed.), *New Paths in Book-collecting*, 1934; H. G. Aldis, *The Printed Book*, 1941; P. H. Muir, *Book-collecting as a Hobby in a Series of Letters to Everyman*, 1944; J. Carter, *Taste and Technique in Book Collecting*, 1948.

Book Illustrations. *see* ILLUSTRATIONS. **Book-keeping.** the science of recording commercial and pecuniary transactions in a systematic and accurate manner, that will preserve a distinct record and thus enable one at any subsequent date to understand their nature and effect with clearness and expedition, and also enable one to ascertain the exact state of the financial position of a business. All transactions should be correctly entered, as the stability of a business depends on the accuracy of its books, for these may be regarded as a mercantile chart, by a reference to which a merchant should be able to obtain information as to his trading; whether a certain dept. is paying or worked at a loss, and whether his business is improving or likely to lead him to the bankruptcy court. Inefficient B. may often be the cause of bankruptcy.

Bankrupts are liable to be penalised for keeping unsatisfactory books (the Bankruptcy Acts, 1883 and 1890). Companies registered under the Companies (Consolidation) Act, 1929, are compelled to keep at least 5 statutory books, and have their books audited annually by a public accountant. Under Section 26 of the Companies (Consolidation) Act, 1908, it is obligatory for a public joint-stock company to submit an ann. statement in the form of a balance-sheet, audited by the company's auditors, to the Registrar of Joint-Stock Companies. Earliest known treatise on B. was by Lucas de Burgo, 1494, but the subject can be traced to the introduction of barter. At that time, whenever the transactions involved credit, traders had recourse to the elementary form of the notched stick, or chalk marks on a handy rock. In the fifteenth century the great mercantile cities of N. Italy, at that time the chief commercial centres of Europe, adopted the principles of double entry (*doppia scrittura*), and this system, under the name of the It. method, gradually made its way over Europe, many of the original names still being used in the practice of the science. The double entry system first appeared in England about the beginning of the seventeenth century, and sev. books were produced on the subject, but only contained a modified version of the It. method. There are one or two different systems of B., and the so-called single entry is but an unsystematic, unreliable, and often misleading method. It merely consists of personal accounts, which only enable a trader to ascertain with whom he trades, and a mass of incomplete memoranda from which it is almost impossible to discover whether a profit has been made or not. The double entry system is mathematically correct in its results, and gives a complete statement of all business dealings. The books kept by a merchant vary according to his business, and on taking up the study of B. one is not taught how to keep the books of a particular trade such as those of a cloth merchant, wine merchant, or publisher, but the principles that will admit of general application to modern business, and this knowledge an intelligent person will have no difficulty in applying to any specific business. The chief books used in a firm keeping their transactions and accounts in the modern method are;

Private Ledger.—This contains the records of the capital and 'drawing,' and the profit and loss accounts; thus if there were 2 partners in a firm, each contributing as capital £5000, the respective amounts would be credited to separate 'capital accounts.' The heading would be *Merchants' Capital Account*, and the amount of cash paid in by one partner would be entered on the right hand (credit) side; first the year and date, then 'by cash £5000,' the same proceeding being employed for the other partner. **Drawing account:** In this would be entered on the left-hand (debit) side the sums drawn out by the partners, and on the credit side the interest allowed on the

capital of each partner, and also the share of the profit realised or loss sustained; when the drawing account is balanced the difference should be transferred to the respective capital accounts of the partners. **Profit and loss account:** To this would be debited all the trade expenses, and on the credit side one would have the gross profit, the difference of course, as previously stated, being transferred to the drawing account.

The cash book is practically a part of the ledger, which is separated for purposes of convenience. In modern B. it is always taken for granted that the cash book is separate from the ledger, and is used alone for entering cash receipts and payments; as this is an integral part of the ledger, all items in it are separate halves of twofold entries; thus cash coming in from John Jones, £6, would be entered in the cash book on the debit side, and posted (the act of separately transferring the entry to the account which such an entry affects in the ledger). This would make the double entry. Thus we see that every entry that is debited in the cash book is credited to a corresponding account in the appropriate ledger, and vice versa. It is the practice of a cashier to enter cash receipts from the accompanying statements or cheques, and the payments from the memoranda or counterfoils in the trader's possession; then the corresponding entries (debit or credit) are made as soon after this as possible. The cash book should be balanced monthly, checked by the balance in hand, at bank, and brought down. It is advisable to prepare a reconciliation statement, showing how the balance is made up, thus:

Cash receipts, as per cash book	£2000	17	6
Cash payments, as per cash book	1560	4	6
Balance	£440	13	0
<i>In hand—</i>			
Notes	£10	0	0
Silver	5	10	6
Copper	0	0	6
	£	15	11 0
<i>At bank</i>	435	2	0
	£440	13	0

The *sales or day book* is used daily to record particulars of goods sold on credit, and is usually in an analysed form, to facilitate the dissecting and summarisation of a variety of goods; thus, by employing a system of grouping the different sales, the merchant can tell at a glance what particular dept. or class of goods is selling the most. A simple form of analysed sales book would be required by a trader dealing in corn, flour, and maize; it would be constructed as specimen on p. 492. When the particulars of an order have been entered in the sales book, the invoice should be made out therefrom and dispatched to the customer, then the entry should be posted to the debit side of the customer's account in the ledger; this makes the double entry.

The sales book should be carefully added up, the totals carried forward, and at the end of a given period, usually monthly, the final totals are posted to the credit of the sales account, thus showing at a glance the correct sales of each particular line.

Bill Book.—It is the custom of many trading concerns to make and receive payments by methods differing from coins, bank-notes, or cheque. 'Bills of exchange,' or 'drafts,' are stamped promises to pay, and according to the

SALES BOOK (ANALYSED FORM)

Date	Sold to	Particulars	Fol.	Corn			Flour			Maize			Total		
				£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
1948 Oct.	J. Jones	1 Sack Flour	66	—	—	—	6	0	0	—	—	—	—	—	—
		1 " Corn		10	0	0	—	—	—	—	—	—	—	—	—
		1 " Maize		—	—	—	—	—	—	10	0	0	26	0	0
				10	0	0	6	0	0	10	0	0	26	0	0

The Purchase or Bought Day Book.—In many business houses, purchases form a considerable part of the transactions, and various methods are employed to record them as concisely as possible. If the trader employs a good system, the labour involved in recording them is considerably lessened. It will be found that the purchases on 'credit' are very numerous and invoices will be received of all shapes and sizes, and in order to avoid considerable postings to the 'purchases account,' and the 'bought day book,' or as it is usually called, the 'purchases journal,' is employed; this is on the same principle as the sales day book, and in this all credit purchases are entered, the various purchases extended to their respective columns, and as the persons named in the purchases journal are creditors they will therefore be posted to the credit side of their personal accounts, as with the sales book. The purchases journal would be added up at the end of a period and the totals posted to the debit of the purchases account, thus saving a multitude of entries in this account.

Journal.—In modern commercial practice the journal proper has almost been done away with, in fact some important business houses employ no journal proper at all. On the Continent, however, the journal is still extensively used, being ruled to contain the whole of a trader's transactions. In France, under the Code of Napoleon, its use was made compulsory. It is now used for recording such transactions as opening and closing entries, especially for those that do not come within the scope of other books, such as adjustments, bad debts, interest, etc. The common form of journal is simple; it consists of columns for the date of the entry, particulars, folio, and 2 cash columns for debit and credit; a usual entry would be thus:

Bills of Exchange Act, 1882 (45 and 46 Vict. chap. 61), may be defined as an unconditional order in writing addressed by one person to another, signed by the person giving it, requiring the person to whom it is addressed to pay on demand, or at a fixed or determined future time, a certain sum in money to, or to the order of, a specified person, or to bearer. A bill of exchange has many advantages, although some business houses do not adopt bills of exchange, considering them as significant of a state of weak finance. Some of the chief advantages of a bill of exchange are: it is a negotiable instrument, a convenient method for the transfer of debts, and there is prompt legal recovery in the case of non-payment. A firm may be financially embarrassed but have a considerable amount owing in book debts, so they arrange for some of their debtors to accept a bill drawn upon them; they can then obtain financial relief in a number of ways; discount the bill with a banker or bill broker, who will advance the money on it, subject to the deduction of a small discount, or they may transfer it by endorsement to a creditor. As it would be inconvenient to post a bill of exchange direct to the ledger on account of the numerous features of it, e.g. the dates of acceptance and maturity, the names of the acceptor, the bank payable, etc., it is usual to keep a separate record called a bill book, which sets forth in analysed form the date drawn, the drawer, bank payable at, tenor of bill, and due dates, these particulars being required for the due recording of a bill. When a bill has been accepted and received by the 'drawer' it is entered in the bill book, and the 'acceptor' immediately credited, and at the end of a given period the bill book is added up and the total transferred to the debit of the 'bills receivable account,' thus we have the

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		Dr.		Cr.	
1948 Oct. 1		Folio	£ s. d.	£ s. d.	
	Bad Debts Account	66	6 0 0	6 0 0	
	To H. Cooper		—	—	
	Being amount written off. Debtor having absconded				

double entry. The entries necessary for a bill payable would be *vice versa*.

Returns Book.—In many cases a trader returns goods for various reasons; some may have been damaged in transit, portions may be unsatisfactory and not up to sample, the wrong goods may have been sent. In the case of 'returns inward' a credit note should be at once made out, stating particulars of the returns and allowance, and should be entered at the same time in the returns book, which follows on lines similar to the sales day book; the item should be posted from there into the customer's account in the ledger; the returns book should be added up at the end of the period, and the totals transferred to the debit of the sales account. *Returns outward* in the majority of cases are entered at the back of the purchases journal, posted from there to the creditor's account, and the total of the returns outward posted to the credit of the purchases account.

Ledgers.—An impersonal ledger would contain particulars of all property and nominal accounts. Property or real accounts would consist of buildings, plant, and machinery, stock, goodwill, copyright, patents, etc., and in the case of these accounts all property acquired is posted on the debit side of the account, and is always regarded in business as a debtor to the trade for the amount paid in that direction. Sometimes property is parted with; when this is so, the respective property account should be credited. *Nominal accounts* are the subdivisions of the profit and loss accounts, and would be divided under the heading of wages, discount, trade expenses, interest, rent, rates, and taxes, bad debts, depreciation, repairs, etc. When these represent losses they should be debited to their respective accounts, when a gain, such as interest, discount, or rents received, then they should be credited. The *sales ledger* contains the record of all the sales to customers. In very large establishments having an extensive turnover it is necessary to have the sales ledger divided into parts or sections, such as in., country, and foreign, and in some cases these are subdivided, so that 1 ledger may be in 4, then each ledger will contain so many letters of the alphabet, the first ledger having the letters A to G, and the others running consecutively. In the case of a large business it

is very desirable that the ledgers should be divided, as this facilitates the discovery of errors, each book being balanced separately, and it also does away with the inconvenience of a cumbersome book. *Bought ledger* is the facsimile of the sales ledger, but the entries are reversed; all items being posted from the purchases jour. and placed on the credit side of the bought ledger. This and the debtors ledger especially should be posted daily.

Trial Balance.—This may consist of the total postings to the ledger, or the balances appearing at a certain date before the closing entries have been made. The correct method to use when preparing a trial balance is to extract the debit and credit balances and not the total postings, and is generally adopted in business. It exhibits in a concise form the information from which, after the necessary adjustments have been made, a profit and loss account, and balance sheet can be constructed. The total of the debit balances should agree with the total of the credit balances, and if they should not do so it shows at once that an error has occurred either in postings or in the compilation of the trial balance. Even if both sides agree there is still the possibility of compensating errors, e.g. an item of trade expense, which should have been treated as a loss, may have been entered as an asset. A trial balance, therefore, only proves that there is a credit for every debit, but in practice, if the trial balance agrees, it is generally taken that the postings have been correct, and that the accuracy of the books has been proved.

Balance sheet is a summary in a classified form of the balances remaining in a set of books, kept by double entry, extracted after all the nominal accounts have been closed and all adjusting entries made. It shows the position of a business in relation to its proprietor and other parties, and it is prepared with a view of ascertaining the correct financial status of a trading concern, whether solvent or insolvent. Liabilities are shown on the left-hand side and the assets on the right. As a balance sheet is not an account, but a transcript of ledger balances at a given date, it should never be headed with 'Dr. or 'Cr.'; some accountants, however, still occasionally prefix 'To' and 'By', which is incorrect. A simple form of a balance sheet is:

BALANCE SHEET OF WILLIAMS & McDONALD ON 31ST DEC. 1948

<i>Liabilities</i>			<i>Assets</i>		
Capital Accounts:			Freehold Premises		£10,000
R. H. Williams	£10,000		Plant and Machinery		5,000
P. McDonald	10,000		Stock on hand		4,000
		£20,000	Sundry Debtors		8,000
Sundry Creditors:			Cash at Bank		1,000
On open accounts	£4,000				
On Loan	2,000				
		6,000			
Balance, Profit		2,000			
		£28,000			£28,000

B. is one of the subjects taught in the majority of the educational institutions in London and the provs. It is possible to obtain tuition at any of the evening class centres held by the London County Council during the winter session on payment of a nominal fee. The pupils are entered for the examinations held by the public examination bodies, at whose examinations any one may sit on payment of a small fee. The prin. London bodies are; the London Chamber of Commerce, the Society of Arts, the National Union of Teachers; the Association of B. Teachers, etc. In addition to the above are the special professional societies for whose examinations only those who are specially qualified or articulated are permitted to sit. Text-books recommended for use: H. J. Clack, *Advanced Book-keeping*; for the *Advanced Student*, 1932; A. J. Favell *Practical Book-keeping and Accounts* (two parts), 1934-35; G. O. Sutherland and W. Padget, *The Groundwork of Book-keeping*, 1936; E. F. Spicer and E. C. Pepler, *Book-keeping and Accounts* (tenth ed.), 1938; D. Cousins, *Book-keeping and Accounts*, 1943; H. Brown, *Municipal Book-keeping and Accounts*, 1946. See also under CALCULATING MACHINES.

Book-land, see BOCLAND.

Book League, National, see NATIONAL BOOK LEAGUE.

Book-lice, insects of the family Psocidae and order Psocoptera, which destroy the bindings of books; the peculiar tapping noise they make has earned for them the title of *death-watches*. *Atropos* and *Clothilla* are genera which include mischievous B.

Bookmaking, see BETTING.

Book of the Dead, see DEAD, BOOK OF THE.

Bookplate. In its technical sense the word bookplate is synonymous with the term *ex libris*. *Ex libris* means literally 'out of the books' owned by any particular person. It denotes a label, impression, or inscription, showing the name or monogram of the owner of the particular book, and is frequently adorned with artistic embellishments, besides showing the owner's arms or heraldic device. B. are generally to be seen pasted just inside the front board or cover of the book. In England there is no probability of any discovery of Bs. before the reign of Elizabeth. Movable Bs. in hand-painted woodcuts, displaying the particular heraldic escutcheon supported by some allegorical figure, are recorded by Warnecke as having adorned the books given in the fifteenth century to a Ger. branch of the Carthusian monks. The B. of Sir Nicholas Bacon, now to be seen in the Cambridge Univ. library, seems to be the earliest extant Eng. B. It contains a somewhat flamboyant device of a shield, with 2 stars at the top left hand corner and again towards the bottom right, with bars across the remaining corners, the whole surmounted by a representation of the head and neck of a knight in armour and a wild boar. At the bottom is the motto *Mediocritas firma* (things which are

moderate are sure), and also in Lat. words indicating that he presents the book to the library of Cambridge Univ. There are 2 ways of regarding B. as judged by the light of their later hist. They may be looked upon merely as adjuncts to the binding of a book, fulfilling the purely utilitarian function of denoting the owner, or on the other hand, as works of art, reflecting the current taste in decorative symbols. In this latter and more elaborate class of cases great names have figured in the past as designers, e.g. the B. of Spengler was engraved by Albrecht Dürer. Many Bs., too, are known to have been designed by Holbein and other Ger. masters of painting. Eng. Bs. underwent many changes in style. The earliest were plain devices in no way reminiscent of the ornate B. devised in Germany. They retained throughout the period between Elizabeth's reign and the end of the seventeenth century a purely armorial character. It was only after the accession of Charles II. that Eng. Bs. began to reveal a higher degree of distinctiveness with a far greater profusion of the ornamental accessories of drapery and scroll-work, but with a corresponding plainness in the heraldry itself. Later the drapery and scrollwork, and also the armorial design, became less elaborate. Representations of oaken frames fancifully designed, and the conventional shell, and scrollwork in imitation of the rococo decoration of Louis Quatorze workmanship in furniture and architecture became popular. One radical difference between the earlier and later Bs. is that in the later all semblance of flatness or mere outline in design disappeared in favour of the pictorial representation in light and shade of all manner of objects. The introduction of different objects bearing no relation to the armorial bearings of the owner gave an appearance of incongruity, and led to a reaction in favour of greater consistency and simplicity of style. The shield once more came to the front as the really prominent object, but its shape, instead of varying with the owner's taste, becomes almost always assimilated to that of an urn. The accessory ornamentation consists in general of sprays and wreaths, but occasionally of something far more elaborate, e.g. a B. designed by Bewick shows an urn-shaped shield with the head of some mythical heraldic animal upon it, resting on a bluff of ground surmounted by foliage with water, boats, and a church in the background. There is a considerable body of literature on Bs. and various *ex-libris* societies have been estab. Both are of quite recent origin, a fact which has led to the conclusion that the systematic study of Bs. is a modern event. At the present day many modern Eng. artists of repute have made a special feature of designing them, the B. for the most part being reproduced by some form of process work. In style they are as highly artistic as ever, but there is once more observable a reversion to the elimination of heraldic in favour of symbolic devices.

Book-publishing, see PUBLISHING.

Book-scorpion (*Chetifer cancroides*), arachnid of the order Pseudoscorpiones and family Cheliferidae. They are brownish in colour, have 2 eyes, and probably live on book-lice (q.v.).

Bookselling, trade of classical antiquity, originating in the early practice of copying books by educated slaves and selling them for household libraries. Booksellers (*librarii* or *bibliopole*) of Rome and Athens prominently displayed lists of books outside their doors or windows, and—as instanced by the *Sosil* of Augustus's age—were thriving tradesmen. With the rise of Christianity came a widespread demand for copies of the Gospels, missals, and of other devotional works, though for the most part the sale of these (and of other books) was a monopoly of guilds and of the univ. stationer, and of the king's printer later in the sixteenth century. In medieval times booksellers were called stationers owing to their transacting business at stalls or stations, and as they also sold parchment and writing materials the word stationer is still used to designate similar traders to-day. Hallam states that the trade of B. was estab. in Paris and Bologna in the twelfth century, but certainly the modern system dates from very soon after the introduction of printing. The increased demand for books came with the Reformation, but though books could be bought freely on the continent of Europe, there was no free press in England, and in the sixteenth century the London Company of Stationers had wide powers enabling them to suppress works obnoxious to authority, while Laud, at a later date, introduced a number of restrictions which, however, all disappeared during the Commonwealth. B. antedates the modern system of publishing, for in the sixteenth and seventeenth centuries the bookseller carried out both functions and sometimes the printing as well. One such famous bookseller was Edward Blount (1588-1632) who, with another printer named Jaggard, brought out Heming and Cordell's first folio of Shakespeare (see BLOUNT, EDWARD), while Jacob Tonson (1656-1736) was said to be the first bookseller to throw open Shakespeare to the reading public. Thomas Guy (1644-1724) was bookseller and founder of Guy's Hospital, and James Lackington (1746-1815) was the first bookseller to conduct business on a strictly cash basis. In those days there was no royalty system, the author being paid a lump sum for his work—and often, as the records of 'Grub Street' show, a very small sum. Another evil of those days was the patronage system, by which a struggling writer had his work printed through the favour of some nobleman or other wealthy person, a system in which booksellers had a part; and a variant to that was the subscription system by which wealthy or learned persons subscribed for copies of a work before publication, and which pertains to-day only in the case of books privately printed (though in the trade all orders for a book before the actual date of publication are still called subscrip-

tion orders). The modern book trade is divided into the distinct branches of publishing and wholesale and retail B., and the second-hand and antiquarian trades, or, in other words, modern B. begins with a clear div. of labour between printer, publisher, and retailer. Price regulation in B. has been obtained by the adoption of the net book system as opposed to the former discount system—in which booksellers sold at varying but considerable discounts off pub. prices. Under the Net Book Agreement (which was arrived at by publishers and booksellers towards the end of the nineteenth century) the bookseller may not retail books below the pub. price—an advance on the old-time competition by discounts to private buyers, which can only lead to unrealistic pub. prices and the devaluation of books. Another advance is in the freedom of booksellers to sell any books they choose, subject, of course, to the laws of libel and copyright. In the United Kingdom some 12,000-15,000 books are pub. annually, the total showing a steady increase each decade and affording a rough idea of the vast aggregate sales. But the output of the publishers may not represent the aggregate sales of the booksellers, and though the latter are an independent body, they share to some extent the overall risk of publishing by stocking books. The margin of slow sellers is an unavoidable feature of a trade exposed to the vagaries of public taste. For that reason the commercial aspect of modern B. is tempered by a cultural price that needs to be paid, but that price tends to reduce as the trade expands and selling methods improve. Popular education has increased the demand for books, and as publishers now provide for all classes of readers the bookseller needs to exercise great care in selecting his stock. This is done in co-operation with the publisher's traveller, who carries samples of new books and relevant information. Every new book has a character and selling value of its own, and to order it in advance of pub. (subscription order) the bookseller has to satisfy himself that it is suitable for his class of business and is not likely to become dead stock. Books by estab. authors (especially novelists) are less problematic than first works by unknown writers, though the fortuitous of B. are such that many 'best sellers' have been of the latter class. Why certain books become best sellers often defies analysis, but apart from the merit of the authors, the combined effects of press advertisements, and newspaper and radio reviews, special window displays by booksellers and widespread recommendation by readers, may account for many successes. For the book trade one really successful book by a popular author may have to pay for a number of failures. A best-seller has the disadvantage of diverting public interest from general stock. Booksellers largely rely on 'bread and butter' lines to maintain a steady income. These are the perennials of publishers' lists—books that have entered into public esteem and are more or less in constant

demand. Cheap reprints of the world's best literature (both auct. and modern) have considerably extended the field of book-buying and strengthened the educational value of B. For the classification of books embraces all subjects and, though the bookseller cannot be expected to be a specialist in all of them, yet his ability to assist and give the maximum service to all his customers constitutes the art of the trade. This art has been advanced by the spread of knowledge and the consequent greater variety of books. Modern wars have practically thrown up a new literature in science, politics, and sociology, while children's books are treated with a seriousness unknown to any previous age. There is also an increasing range of books on travel and topography, music and country life, while the development of photography and book illustration has extended all classes of pictorial literature. Thus the complexity of modern B. requires an acute sense of buying and salesmanship. Most booksellers can speculate on the support of regular customers, but to provide for casual trade needs greater insight. Encouragement to exercise personal effort in B. is implied in the difference of discount terms allowed by the publishers—usually a larger discount on general books ordered on subscription than on orders after publication date, unless for a number of books for stock. Orders for books not in stock are entered in a day book (see BOOK-KEEPING) and then transmitted to the respective publishers or to a wholesale bookseller who supply these daily wants. The sale-or-return system was designed to help booksellers to stock particular books or to make special displays of books at the publisher's risk. In recent years the practice has been confined to books that, by reason of the author's associations or of the contents of the book are of particular local interest. Another diminishing branch of B. is that of 'remainders'—i.e. certain books of which the publishers have surplus stock and which are therefore sold off cheaply. Bargain sales are not usual in the new book trade because all books are supplied at a fixed pub. price, but soiled or otherwise unsaleable books may be sold at a reduced price subject to arrangement with the publisher. The influence of films and broadcasting on B. is more or less speculative, as people are often satisfied with the visual or aural presentation of a story. What is probably more effective in stimulating sales is the broadcasting of book talks by eminent critics and the recommendation of particular works. An offshoot of direct B. is the token system by which book tokens can be bought at varying amounts and exchanged for books at any bookshop (that deals in tokens) throughout the country. Books are frequently sold by some recognised specialist in a field of culture or recreation, e.g. the musical instrument dealer sells books on music, as well as sheet music, etc., and the fishing tackle shop keeps a supply of books on angling. Modern B. also includes a good deal of edu-

cational trade with schools, though in this respect the bookseller acts more as an intermediary for the publisher and the trade discount is usually considerably lower than in general books. In modern B. there is theory as well as practice, and a recent development has been the inauguration of study courses for bookshop assistants, organised by the Booksellers' Association of Great Britain and Ireland, in London and in other parts of the country. The syllabus covers every aspect of B. and enables students to qualify for good positions in the trade. Second-hand and antiquarian B. is very specialised.

The practice of B. in Great Britain as outlined here applies in general to the sale of books in the Eng. language throughout the world, subject of course to differing trade customs in various countries. B. in the countries of the Brit. Commonwealth and Empire is not very dissimilar from that at home, and the broad practice in the U.S.A. resembles that in Great Britain, although there are many features of B. in the U.S.A. which are unique to that country's distributive machinery and widespread home market. There are in most European countries special trade regulations on B.; these may affect in one way or the other the sale of Eng. books, which has increased in some of these countries. See also BOOK; BOOK-CLUBS; BOOK-COLLECTING; COPYRIGHT; LIBRARIES; PUBLISHING. See J. Britnell, *Books and Booksellers in Ancient and Modern Times*, 1923; H. W. Boynton, *Annals of American Book-selling*, 1932; F. A. Mumby, *Publishing and Book-Selling*, 1934, 1949; J. Hampden, *The Book World*, 1935; Marjorie Plant, *The English Book Trade*, 1939; J. S. Bain, *A Bookseller looks back*, 1940; W. G. Corp, *Fifty Years (Booksellers' Association of Great Britain and Ireland)*, 1948. Weekly journals: *Publishers' Circular and Booksellers' Record* (1837); *Bookseller* (1858); and *The Clique* (1890, pub. by the Antiquarian Booksellers' Association).

Books, Battle of the, a famous dispute on the rival merits of aucts. and moderns, which is generally said to have arisen as the result of opinions expressed by Perrault in his academic discourses—opinions to which Boileau retorted with his customary violence. In consequence Perrault produced his *Parallèle des anciens et des modernes*, 1688-97, a work which led to great controversy both in France and England, in which latter country it was taken up by Sir William Temple for the aucts. and, for the moderns, by Dean Swift in his *The Battle of the Books* (written in 1697, and circulated in private, but not pub. till 1704), while William Wotton took a middle course. Richard Bentley's *Dissertation on the Letters of Phalaris*, appended to the second ed. (1697) of Wotton's *Reflections on Ancient and Modern Learning*, was the immediate occasion of Swift's book. In France the later controversialists were La Motte, Fénelon, and de Fontenelle, who brought down on himself the fulminations of both Boileau and Racine. See also BOYLE, CHARLES; FONTENELLE, BERNARD LE

BOVIER DE; BENTLEY, RICHARD; and ANCIENTS AND MODERNS.

Book-worm is the name given to any larvæ which feed on the paper, binding, and paste of books which are not often used, or are stored in museums. They may merely attack the binding, or may bore tunnels through the pages. Sev. species of *Anobium*, *Anthrenus*, *Ptinus*, and *Dermestes* are coleopterous insects of destructive nature which damage books. In America the *Phyllodromia* (or *Blatta*)



British Museum

RETURN ROOMER-
ANG USED IN
HUNTING

N.W. Australia.

germanica, a cockroach known as the Croton bug, performs the function of a B., though it is naturally not considered as one. Frequent overhauling of books is the best preventive of such pests. See W. Blades, *Enemies of Books*, 1896; J. F. X. O'Connor, *Facts about Book-worms*, 1898.

Boole, George (1815-64), Eng. mathematician and logician, b. at Lincoln. His first important publication is the *Mathematical Analysis of Logic*, 1847, followed in 1854 by *An Investigation of the Laws of Thought*, etc., the work on which his fame rests. He also pub. a *Treatise on Differential Equations*, 1859, and a *Treatise on the Calculus of Finite Differences*, 1860.

Boom, tn. of Belgium, in the prov. of, and 12 m. from the city of, Antwerp. There are brick and tile works, breweries, salt and starch manufs. Pop. 19,000.

Boom. (1) Nautical term (allied to 'beam,' from Dutch *boom*) for the spars which are attached to the mast at one end, and controlled by the sheet at the other end, extending along the foot of the sails. According to which sail it is connected with, it is termed the jib-boom, the main-boom, etc. In modern battleships Bs. are fitted along the sides, and form the supports for the torpedo nets. The term is also used for the barrier of timber, etc., which is fastened along the mouth of a harbour in war to prevent the entrance of the enemy's vessels, as the famous B. in the siege of Londonderry in 1689. (2) Commercial term, originated in the U.S.A., having come into use during the latter half of the nineteenth century. To 'boom' (M.E. *bummen*) means 'to make a deep continued sound,' and as a sudden movement often produces an increasing sound, B. has come to mean

a sudden spurt of activity in the business world.

Boomer, Australian name of the male of the largest species of kangaroo.

Boomerang, missile made of wood used by the aborigines of Australia and of some other places. There are 2 kinds of B., which must be carefully distinguished, the return B. and the non-return B. The latter is used by the natives for the purposes of war. The origin of the term is not definitely known, but it seems to have been the word used by the aborigines of New S. Wales for the weapons which they themselves used. The return B. is made of hard wood, and in Australia is always curved at an angle of between 90° and 120°. It is between 2 and 3 ft. long and weighs roughly half a pound. One side of it is flat, the other convex, and along the convex side runs a sharp edge. The arms have a skew, and upon the skew depends the return or non-return of the B. The B., when about to be thrown, is held vertically, and when thrown as much rotation as possible should be imparted to it. After describing a circle of considerable diameter, it returns to the thrower. It has been known to return to the thrower even after striking the ground. No record of B. throws has been kept, but a skillful thrower can make the weapon travel over 200 yds. The war B. is of the non-return type, and is a weapon of considerable effect in the hands of a skillful aborigine.

Boomplaats, tn. of S. Africa in the Orange Free State. It is the site of a battle fought in 1848, when the Brit. under Sir Harry Smith defeated the Boers under Andries Pretorius.

Boonder, see RUESUS MONKEY.

Boondes, see BUNDI.

Boone, city of B. co., Iowa, U.S.A. It has machine, gloves, tobacco, harness, tile manufs., besides a pork-packing factory. Pop. 12,300.

Boone, Daniel (1734-1820), Amer. backwoodsman and pioneer, b. in Pennsylvania, of Eng. descent. His early life was spent on his father's farm. In 1767 he visited the dist. of Kentucky, which, however, he was not the first to discover. Later in sev. campaigns he explored more thoroughly the ter. of Kentucky, meeting with many adventures. In 1775 he led the party of settlers who founded the tn. of Boonesborough in Kentucky. Later, during one of his expeditions, he was captured by Shawnee Indians, adopted into the tribe, and only managed to escape with considerable difficulty. For a short time he sat in the Virginia legislature as the representative of Kentucky. He lost all his land in Kentucky owing to his want of formal titles, and retired later to Missouri, where in 1803, when this ter. came into the possession of the U.S.A., he again lost his land for the same reason. In 1812 he was granted some land as a recognition of his services. Many biographies of him have been written, one of the best being that by Reuben G. Thwaites, *Daniel Boone*, 1902.

Boonton, city in Morris co., New Jersey, U.S.A., situated 25 m. N.W. of New York.

The prin. industry is smelting the magnetic iron of the neighbouring Kittatinny Mts., and there are large iron-works and blast furnaces for this purpose. Pop. 7000.

Boonville, tn. of Oneida co., New York, U.S.A., 58 m. E. of Oswego. Manufs. gloves, leather, churns, etc. Pop. 3500.

Boonville, tn. in Cooper co., Missouri, U.S.A., on the r.b. of the Missouri, about 40 m. N.W. from Jefferson City. Coal, iron, and lead are found in the neighbourhood. Its manufs. are bricks, earthenware, marble monuments, carriages, flour, and tobacco. It is served by the Missouri Pacific and the Kansas and Texas railways. Pop. 6000.

Boops, genus of Acanthopterygii, family Sparidae (sea-breams), is characterised by the species possessing trenchant teeth. They are carnivorous, often brightly coloured fishes, inhabiting tropical and temperate seas, and are usually edible. *B. salpa*, or *Sparus salpa*, has a bluish body with yellow stripes.

Boorde, or **Borde**, Andrew (c. 1490-1549), Eng. physician and author, was educated at Oxford. He joined the Carthusians, while still a minor, and was made suffragan bishop of Chichester in 1521. He was freed from his monastic vows in 1529, and then studied medicine, afterwards travelling on the Continent. He was, after he had returned to London in 1531, sent on a mission by Thomas Cromwell to discover the state of feeling which prevailed abroad towards the Eng. king. In 1536-38 he travelled widely through nearly every European country, but his account of his travels, sent to Cromwell, was lost. Wrote *First Boke of the Introduction of Knowledge* (the earliest continental travel guide), c. 1542; *Dietary of Healthe* (1562) and *Breviary* (1562).

Boos, Martin (1762-1825), Ger. priest, b. in Bavaria. In 1790 he originated a religious movement parallel to that of the Protestant Pietists. He was persecuted by the Catholics, but himself always remained a staunch Catholic. He was created prof. of theology at Düsseldorf in 1810, and held the post till 1819.

Booster, a small dynamo worked as an auxiliary to a larger one for the purpose of charging, or adjusting the charge of, accumulators, in an electrical supply station. It is usually arranged that when the load on the supply dynamo is greatest, the auxiliary dynamo help the accumulators to discharge, but when the call for current is less, the Bs. serve to re-charge the accumulators.

Boot, see **BOOTS AND SHOES**.

Boot, **Boots**, or **Bootikin**, an instrument of torture used in order to extract confession from suspects. It seems to have been first introduced in Scotland, where its use appears to have continued down to the union of the 2 kingdoms in 1707, when it was enacted that torture should not again be used in Scotland. Torture appears to have been last used in England about the year 1640. The B. was made usually of wood and iron, and was fastened

on to the leg of the victim, wooden wedges being afterwards inserted, usually between the B. and the calf, and driven in forcibly with a wooden mallet. Between the blows, questions were put to the sufferer until he either confessed or was mercifully released by unconsciousness. At the same time that this instrument of torture flourished in Scotland, a similar instrument was used in Germany called the 'Spanish B.' Other varieties of the same instrument seem to have been Bs. which were placed on the victim and then excessively heated, and Bs. made wet and then placed on the victim's foot and slowly dried.

Bootan, or **Bhootan**, see **BHUTAN**.

Boötes, a constellation next in the heavens to the Great Bear. If the latter constellation be regarded—as it is sometimes called—a Plough, or a Wagon, B. may be regarded as representing its driver. B. was, in fact, termed by the Gks. *Arctophylax*, the 'bear-keeper.' Alpha Boötis, or Arcturus (q.v.), is the brightest star in the N. sidereal hemisphere and Miræ (Epsilon Boötis) is a beautiful binary of orange and green.

Booth (from a Scandinavian root, seen also in the Icelandic *bú*, to dwell, and the Dan. *bod*) is a covered stall at a fair or market, set up for the purpose of displaying goods for sale. At first a B. was a temporary structure, taken down each week after market day, but there was always a tendency for the B. to become permanent. Records, dating as far back as the twelfth century, have preserved many complaints lodged against encroachments on the market-place. Thus in 1192 the abbey of Bury St. Edmunds made a fruitless attempt to remove the sheds which citizens had dared to set up without the abbot's consent. That tendency towards permanence is well illustrated by the 'Lucken-Is.,' that grew up in Edinburgh High Street. A burghess became so attached to his own little niche beneath the tn. hall, that the timber planks of his movable stall were gradually replaced by lath and plaster, and even by brick and stone. These unsightly 'krames' or Bs., fastened to the basement of public buildings, have been aptly compared to limpets on a rock. The shopman stood within the unglazed window, the shutter of which divided horizontally in the middle, so that the upper part formed an eaves or awning, and the lower portion a shelf for his wares.

Booth, Barton (1681-1730), Eng. actor in the reigns of Anne and George I., joined a company of strolling players in his youth. He had considerable talent, and was received in Dublin with great applause. In 1701 he came to London and joined the Drury Lane company. His most famous part was that of Cato in Addison's play of that name. He was buried in Westminster Abbey. His life was written by Theophilus Cibber.

Booth, Charles (1840-1916), Eng. sociologist, b. in Liverpool. He was a member of the firm of Alfred Booth & Co., Liverpool, and a fellow of the Royal Society.

He made inquiries into the statistics affecting various social questions, and in his book, *Life and Labour of the People in London*, 1891-1903, he deals with these statistics, and discusses the condition of the different classes. He did a great deal towards securing old age pensions, and on this subject he wrote the following books: *Pauperism; a Picture; and Endowment of Old Age; an Argument*, 1892, and *Old Age Pensions and the Aged Poor*, 1899. He was a privy councillor, and won a high place among sociologists of the day. President of the Royal Statistical Society. 1902-4.

Booth, Edwin Thomas (1833-93), Amer. actor, b. at Belair, Maryland, the second son of Junius Brutus B. (q.v.). He made sev. appearances on the stage previous to his father's death, but was not held to have been a very great success. After the death of his father (1852), he toured California and Australia, and met with overwhelming success. On his return from his tour, he played at the Winter Gardens in New York (1862), producing Shakespearean plays on a magnificent scale. During the period which followed the assassination of President Lincoln by his brother, John Wilkes B., his career was overshadowed by that event (1865). In 1868 he built a theatre of his own in New York, but eventually lost all his fortune in it. He produced here a number of Shakespeare's plays, and by great labour was able to retrieve his fortunes. He founded the 'Players' Club in New York, and converted his own private residence into a club house. He was a first-rate actor, particularly in tragic parts, and was asked by Irving to play in London the roles of Othello and Jago alternately with himself. His last appearance was as Hamlet in 1891 in Brooklyn. Life by E. B. Grossman (1894).

Booth, Evangeline Cory (b. 1865), 'General' of the Salvation Army, b. Dec. 25, at Cambridge Heath, Hackney, seventh child of William B., the founder of that body. She was leader of the Salvation Army successively in Great Britain, Canada, Newfoundland, and the U.S.A., and succeeded Edward J. Higgins as gen. in 1934. She has composed sev. songs, including *Songs of the Evangel*, 1927. Other publications: *Towards a Better World* (sermons), 1929; *Woman*, 1930.

Booth, John Wilkes (1839-65), Amer. actor, the younger brother of Edwin Thomas B. (q.v.). He and his eldest brother, Junius Brutus (fls), played together with Edwin Thomas for some time. In 1865, disappointed by his ill success as an actor, he entered into a conspiracy which had as its object the assassination of Abraham Lincoln, as a revenge for the ill success of the Confederates. He shot the president and managed to escape, although he had broken his leg. He was, however, ultimately tracked to Virginia, where, since he refused to surrender, he was shot.

Booth, Junius Brutus (1796-1852), Eng. actor, b. in London. He received a fair education, and, after trying a number of

professions, he appeared at the age of 17 in some unimportant parts. Two years later he appeared at Covent Garden, and from this time was considered one of the best actors of the age, and Kean's greatest rival. He became famous as an actor in the U.S.A., to which country he migrated in 1821.

Booth, William (1829-1912), better known as Gen. B., was b. at Nottingham. At an early age he came under strong religious influences and, after having been a local preacher with the Wesleyan Methodists and a minister of the Methodist New Connexion, he severed his connection with those bodies and engaged in evangelistic work. His work was done amongst the poorest and the most degraded people, and he organised them into bands who openly testified to their conversion. He organised successively a number of missions, the most successful of which was the Salvation Army in 1878. The 'Army' endeavours to bring religion to those places which the churches cannot or scarcely touch, and to make its converts open witness for Christ. The 'Army,' in spite of general opposition at its commencement, has met with great and long-sustained success. It has spread its field of operations to practically every civilised country in Europe, and the head of the army, 'the Gen.,' was W. B. His wife was of great help to him in his work during her lifetime; she d., however, in 1890. Gen. B. d. in 1912, after a painful illness. The world-wide manifestations of sorrow which followed his death testified to the popularity and intensity of the movement he had founded.

Booth, William Bramwell (1856-1929), eldest son of William B., founder and first 'Gen.' of the Salvation Army, was b. at Halifax, Mar. 8, 1856. Educated privately, he began public work in 1874. Chief of Salvation Army staff from 1880; chairman of Salvation Army Life Assurance Society and the Reliance Bank. He married a daughter of the late Dr. Soper of Plymouth, 1882, by whom he had 2 sons and 5 daughters. All the family joined enthusiastically in carrying on the work started by his father for the relief of the 'submerged tenth.' On his father's death (Aug. 1912), B. succeeded him as gen. of the 'Army.' A movement to destroy the hereditary autocracy of the generalship was begun among Amer. Salvationists in 1925, and spread throughout the organisation, until, on Feb. 13, 1929, when B. was dying and might have been expected to nominate his successor, he was, by order of the High Council, compulsorily retired, and succeeded by Commissioner Edward John Higgins. B. d. at Hadley Wood, June 16, 1929. Among his publications are: *Social Reparation*, 1899; *Bible Battle-Axes*, 1901; *Papers on Life and Religion*, 1920; *These Fifty Years*, 1929.

Boothby, Guy Newell (1867-1905), Australian novelist, b. at Adelaide, S. Australia, on Oct. 13. His grandfather was a Yorkshireman, who emigrated to Australia in 1853. G. B. finally left Australia for England in 1894, and,

settling at Bournemouth, estab. a reputation as a novelist of the popular type. His novels include; *A Bid for Fortune*, or *Dr. Nikola's Vendetta* (1895); and sev. sequels to this, introducing Dr. Nikola, *The Beautiful White Devil* (1896), *The Fascination of the King* (1897).

Boothia, Gulf of, sea passage forming the N. boundary of Boothia Felix. It is an extension of Prince Regent Inlet, and is about 310 m. long.

Boothia Felix, peninsula situated on the N. coast of Canada. It belongs to the Franklin dist., and its area is about 13,100 sq. m. It was discovered by Capt. Ross, 1829-33, and named after Sir Felix Booth, who financed the expedition to the extent of £17,000.

Bootle, tn. of Lancashire, England, situated at the mouth of the Mersey, forming a N. suburb of Liverpool. It is noted for its immense docks along the banks of the riv. It has large iron and engineering works, sev. tanneries, jute factories, corn mills, etc. There are 3 stations, each on the Liverpool overhead electric railway. B. is a fine tn., containing many large public buildings. There are a museum, library, town hall, and sev. parks and recreation grounds. The parli. bor. returns 1 member to Parliament. The tn. suffered severely during the Ger. air raids on the Merseyside in 1940-41. Pop. 77,000.

Bootlegging, term applied to the smuggling of illicit liquor. It is an old name which goes back to days when the liquor was concealed in the large sea-boot of the smuggler, and was revived in the twentieth century in connection with the smuggling of alcohol into the U.S.A. at the time of prohibition (*q.v.*). In the early days of prohibition B. was a large industrial organisation with a network of traffic over the Canadian and Mexican borders of the U.S.A., but this trade was later stopped by the vigilance of Federal prohibition agents. Modern B. approximated more to old-time smuggling in the attempts that were made to land liquor on the Pacific and Atlantic coasts of

America. On the Atlantic side the consignments of alcohol were shipped from the distilleries of Scotland to the 'rum row,' as it was called, off New Jersey, Brit. Bahamas, and the is. of St. Pierre, off Newfoundland, were used as half-way houses, and from them means were found to transport the liquor to the Amer. coast. Liquor importations into Nassau, Brit. Bahamas, increased so phenomenally that gov. revenue from a tax of \$7 a case went up by leaps and bounds. Another method of B. was for the 'rum-fleet' to wait out at sea beyond the reach of revenue cutters, Amer. waters being fixed at a 12-m. limit. The liquor was then conveyed to the coast at night by fast motor boats. The B. industry, however, suffered from its degeneracy, for so many poisonous concoctions were peddled under faked labels that neither the bootlegger nor his customer could be certain of the genuineness of a bootlegged brand. A serious aspect of B. was that it afforded equal opportunities for the importation of drugs and narcotics. The bootlegger depended upon a business organisation, linking him up with the smuggler or the 'moonshiner,' the latter being the man who owned a secret still, but he had another enemy beside the prohibition agent, and that was the 'highjacker.' The highjacker preyed upon the bootlegger and, playing a lone hand, constituted the most dangerous element in the whole lawless trade of B.

Boots and Shoes. Many and various have been the different forms of covering for the human foot, and many stages of evolution have been passed through from the primitive sandal to the latest products of the boot factories. Not only fashions, but climatic conditions, have always been factors in the form of foot-gear. The most elementary form of covering is the sandal; the next is the slipper, in which the straps or lacing of the sandal are discarded; from the slipper the ordinary short shoe is evolved, and from the latter the boot. As it is the most primitive, so naturally is the sandal

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| 1. Stone Age skin shoe | 23. Norman man's shoe | 38. Boy's shoe, 1550 |
| 2. Assyrian sandal | 24. } | 39. Cavalier boot, 1640 |
| 3. Assyrian child's sandal | 25. } Men's shoes, twelfth | 40. Man's shoe, 1630 |
| 4. Egyptian sandal | century | 41. Woman's shoe, 1630 |
| 5. Egyptian shoe | 26. } | 42. Man's shoe, 1670 |
| 6. Greek plaited shoe | 27. } Men's shoes thirteen | 43. Kiding 'jack' boot, 1690 |
| 7. Greek sandals | 28. } century | 44. Man's shoe, 1750 |
| 7A. Greek child's shoe | 29. Long point shoe with tied- | 45. Man's shoe, 1746 |
| 8. Roman boot | up toe, late fourteenth | 46. Riding boot, 1760 |
| 9. Roman peasant's shoe | century | 47. Woman's shoe, 1760 |
| 10. Roman boot | 30. Shoe with wooden clog, | 48. Woman's shoe, 1743 |
| 11. Roman sandal | fourteenth century | 49. Man's top boot, 1705 |
| 12. Roman woman's shoe | 31. 'Poulaine' shoe, fifteenth | 50. 'Hessian' boot, 1800 |
| 13. Chinese woman's shoe | century | 51. Woman's shoe, 1812 |
| 14. Chinese man's shoe | 32. Riding boot, fifteenth | 52. Man's dress shoe, 1820 |
| 15. Indian rajah's shoe | century | 53. Wellington boot, 1842 |
| 16. Indian child's shoe | 33. 'Bull mouth' shoe, end of | 54. Elastic-side boot, 1870 |
| 17. Indian man's shoe | fifteenth century | 55. Woman's button boot, 1895 |
| 18. Arab man's shoe | 34. } Men's shoes, mid-sixteenth | 56. Man's cloth-top boot, 1905 |
| 19. Arab woman's slipper | century | 57. Man's boot, 1940 |
| 20. } Shoes, mid-eighth century | 35. } | 58. } Women's shoes, 1940 |
| 21. } | 36. Elizabethan boot, 1580 | 59. } |
| 22. Saxon peasant's shoe, 1070 | 37. Man's shoe, 1570 | 60. Man's shoe, 1940 |



BOOTS AND SHOES THROUGH THE AGES: KEY OPPOSITE

the most anct. form of foot-covering. In nearly every museum specimens can be seen of sandals dating back to the time of the Egyptians; papyrus was a common material for sandals of that period. Long boots were worn by hunters, and the *colturnus*, or boot with a very thick sole, was used by traxedians on the stage. In Rome there were more varieties; *solææ*, or sandals, were used by the plebs or common people; *calcei*, or black leather shoes, were worn by members of the patrician class; *mullei*, or red leather shoes, were reserved for the use of senators. From early times up to the present day, the oriental peoples excelled in the art of making beautifully ornamented slippers. In medieval times shoes were worn on the continent of Europe, and by the end of the fourteenth century the fashion of pointed toes had been carried to such a length that the toes of many shoes of that period project for over a foot, in a long curled-up strip of leather. By the time of Edward IV. the boot proper was *de rigueur* as an article of knightly attire, and continued so until the more ornamented Fr. boot was introduced by Charles II. William III. and his followers estab. the use of the jack-boot for horsemen, and it was used by the Brit. cavalry until quite recently. A somewhat less cumbersome form is still used by the Horse Guards. The jack-boot was superseded in general use by the Hessian boot, which was more slightly over the tight pantaloons in vogue than the former. For use under loose pantaloons the duke of Wellington introduced the boot which bears his name. After the Wellington the Blucher boot was used, and now the form of boot generally worn is a short boot just covering the ankles for men's use, and somewhat higher for ladies.

Boot and Shoe Manufacture.—Until the advent of machinery, all boots were made by hand; but shoe making as a handicraft is dying out, and machinery may be used for all the processes. The machine-made products do not equal the best of those made by hand in flexibility or endurance; but a more even standard is attained and the output attained by machinery is of course much greater. The Blake machine for sewing the soles together marked the first step in the transition from hand to machine-made goods, and the machinery later invented for welting the boot rendered the best of the latter practically on a par with the best of the former. The difference between the riveted boot, made by the Blake process, and a welted boot is briefly as follows. A Blake or riveted boot is sewn, or riveted, from sole to insole, at one operation; the uppers at the same time fastened between the 2 soles. This vertical seam, even if sewn, has a tendency to stiffen the boot unless the leather used is exceedingly light and flexible. If the boot is riveted, it is still stiffer, and therefore this style of boot is used only for rougher wear. When a boot is welted, whether by machine or hand, the upper, insole, and welt are

first sewn together with a horizontal seam, extending half through the insole; the welt and sole are then joined by a second operation. The defect of the Blake and riveted boots is by this means eliminated, as the boot bends inwards along the horizontal seam, and is much more pliable. In almost all modern factories human labour is dispensed with as much as possible; in shaping the uppers it is used more than in the rest of the processes. For the upper parts of the boot the thinner and more pliable parts of the skin are used, whilst the thicker portions, such as butts, shoulders, and bends, are used for the sole. The first process in making the uppers is cutting them out according to pattern. The skin is laid upon a bench, the pattern is placed on the top of it, and the leather is cut round the edges of the pattern with a sharp knife. The various pieces of the uppers are then sent to the machine room. A variety of machines are here used; stitching machines, buttonholing machines, edge-folding machines, barring machines, machines for attaching buttons, machines for trimming the edges of the leather, sewing machines of various kinds, etc. In lace-up boots, a single machine punches the hole, puts in the eyelet, and fastens it. The leathers that have to be seamed or folded are 'skived' first, then they are pasted together and placed under the sewing-machine, and after they have been stitched together the seams are levelled down by a small machine hammer. The thicker leathers used in the bottom parts are cut from the skin, after being pressed under powerful presses, with variously shaped dies according to the various parts required. The layers of leather required for the heel are first of all nailed together loosely in one machine, and then crushed solid in another, which exerts on them a pressure of sev. tons. All the various parts of the boot are now sent to the assembling room, preparatory to being started through the making and finishing rooms. The boots which are to be made Blake sewn receive slightly different treatment from those that are to be welted. The Blake last is iron on the bottom, and so the lasting machine permanently tacks the upper to the insole with short tacks, which are clenched when coming into contact with the last. The sole, which has been previously channelled for the thread, is now placed in position, and sewn through with the Blake machine. In the welted boot the upper is not nailed down to the insole, but is held by a lip previously cut in the latter, standing out therefrom vertically. The lip, the upper, and the welt are all 3 sewn together by a machine whilst the boot is still on the last. The welt is now beaten out straight, and the sole laid on and held in position by paste, etc., until it is stitched. From this point the treatment of Blake and welted boots is similar, save that the former generally have the nails driven from the inside through to the heel, while the latter have the nails driven through the heel to the sole. After the wearing part of the upper has been

stitched by wire, the boot is 'made' and requires only finishing. In the finishing room the heel is first trimmed into shape, and then smoothed with sandpaper. The sole is treated in the same way, and the edges of both are then coloured and burnished with machine-driven hot irons. In welted boots a machine now makes the prick marks between the stitches, and the bottoms are then coloured, and given a gloss by revolving brushes and pads. The boot is then finished and ready for wear. See B. E. Hazard, *The Boot and Shoe Industry*, 1921; H. Norris, *Costume and Fashion*, 1924-38; C. H. W. Mander, *Description and Historical Account of the Guild of Cordwainers*, 1931; E. Bordoli, *Footwear*, 1933.

Booty (term allied to the O.E. *bot*, later 'boot,' meaning 'good'), plunder, usually obtained by violent means. In a special sense it denotes things taken by land forces in war. In England the High Court of Admiralty has jurisdiction to try any question concerning B. of war which may be referred to it by the Privy Council. Property captured by the naval forces is called 'prize' and forms the peculiar province of the prize court of the Admiralty. See also PRIZE.

Bopaul, see BIOPAL.

Bopp, Franz (1791-1867), Ger. philologist, studied at Aschaffenburg under Windischmann, and afterwards stayed successively in Paris, London, and Göttingen, studying the Hindustani languages. He returned to Germany, and in 1821 was prof. of philology and Sanscrit at the univ. of Berlin. In the following year he was elected a member of the Royal Prussian Academy, and in 1857 he was made an associate of the Fr. Academy. His work marks the beginning of a new era in linguistic study, as he traced the common origin of the grammar forms and their inflections from compositions of Sanscrit, Gk., Persian, and Ger., a thing never before attempted. His prin. works are: *A System of Conjugation of Sanscrit compared with those of Greek, Latin, Persian, etc.*, 1816; *A Complete System of Sanscrit*, 1820; *A Critical Grammar of Sanscrit*, 1829-32; *A Sanscrit Glossary*, 1830; *A Comparative Grammar of Sanscrit, Zend, Greek, Latin, Lithuanian, Slavonic, Gothic, and German*, 1833-52; *Indo-Celtic Languages*, 1839, etc. He pub. also selections from the *Mahābhārata*.

Boppard, tn. of Germany, situated on the l. b. of the Lower Rhine, about 9 m. from Coblenz. It is a very ant. place, possessing traces of Rom. times. Pop. 7000.

Bora, the lt. name for the violent, cold, dry, N.E. wind which is common in the Adriatic, especially along the Istrian and Dalmatian coasts. The cause of the prevalence of this wind is the sudden increase in barometric pressure which takes place over the plateaux of Europe in winter, thus sending the cold air into the valleys and over the Adriatic Sea. It also occurs in the neighbourhood of Novorossisk on the Black Sea, and is precisely similar in character to the mistral which is found

along the Fr. Mediterranean littoral. It sometimes lasts for over a week continuously.

Bora, Catherine von (1499-1552), the wife of Luther, was the daughter of a Ger. gentleman who placed her in the convent of Nimbschen, near Grimma. Under the influence of the doctrines of the Reformation, she fled with 8 of her companions in 1523. Luther placed them in honourable families and took upon himself the task of getting them advantageously married; he himself married Catherine. This was in the period of his poverty, when his circumstances were disadvantageous, but Catherine proved a true helpmeet in trouble. She survived the death of her husband by sev. years, and removed from Wittenberg to Leipzig, where she was compelled by lack of means to take in boarders for her living. She afterwards returned to Wittenberg, but removed from there because of the plague, and in going to Torgau suffered an accident on the road, from the effects of which she died.

Bora-Bora, or **Bola-bola**, ls. in the group called Society Is., situated in the Pacific Ocean in about 151° W. long. and 18° S. lat. It rises to a height of 2165 ft. Pop. 800.

Boracic Acid, or **Boric Acid**, H_2BO_3 , a crystalline substance, found native in the volcanic lagoons of Tuscany. B. A. is also contained in the vapours which are exuded from fissures in the rocks of the same dist. The gases are brought into contact with water, which dissolves the B. A. when heated and is afterwards evaporated to recover the crystals. B. A. is soluble in hot water and alcohol, and is of use as an antiseptic, as it kills micro-organisms without affecting living tissue. It is usually employed in the form of an ointment, being an excellent remedy for the aphthous condition of the mouth in infants. It is also used for ulcerated nipples and as a dressing in surgery. The aqueous solution is effective in cleansing the scalp of scurf, and absorbed in stockings checks excessive perspiration in the legs.

Borage (*Borago officinalis*), herb with rough stem and small blue flowers. It is cultivated as a garden flower in the United Kingdom and is occasionally found wild. It is used as an ingredient in claret-cup, probably owing to a supposed cooling property. In former times it was esteemed as a household remedy for slight fevers, but there appears to be no justification for such use.

Boraginaceæ, order of dicotyledons native to tropical and temperate climates, consisting chiefly of herbs, but also of shrubs and trees. The flowers are hermaphrodite, regular and hypogynous, the calyx has 5 joined sepals, the corolla 5 joined petals; there are 5 stamens, and 2 superior carpels, generally deeply divided into 4 lobes with a single style rising between them. The fruit consists of a drupe or 4 achenes. The species agree in having an insipid juice, and their surface covered with stiff white hairs, whence the name *asperifolia*, or rough-leaved,

sometimes given to them. Some species yield a purplish dye, e.g. *Anchusa tinctoria*, *Lithospermum tinctorium*, and some kinds of *Onosma*.

Borah, William Edgar (1865-1940), Amer. senator, b. at Fairfield, Illinois, June 29, 1865; educated at S. Illinois Academy, Enfield, and at univ. of Kansas. Admitted to Bar, 1889; practised at Lyons, Kansas, 1889-91; then removed to Boise, Idaho. Member of Republican National Committee, 1908-12. Agreed with Theodore Roosevelt that re-nomination of President Taft in latter year was fraudulently managed; but disagreed with Roosevelt's extreme programme (especially the part proposing plebiscite for recall of judicial decisions) and did not desert his party. Was conspicuous among those that defeated President Wilson's attempt to bring his country into the League of Nations. Nevertheless it was through B's action that the negotiations resulting in the Disarmament Conference (Nov. 1921) were undertaken; and it was he who proposed 'outlawry of war' in the Senate in 1923. In 1924 he refused nomination for the vice-presidency.

Borås, tn. of Sweden in the prov. of Wenersborg; makes artificial silk and other textile fabrics, iron wares, and trades in cattle, horses, and iron. Pop. 34,000.

Borax, sodium metaborate, $\text{Na}_2\text{B}_4\text{O}_7$, a substance found in nature in the form of monoclinic crystals, white or greyish in colour, transparent or translucent, with a hardness of 2 to $2\frac{1}{2}$ and a sp. gr. of 1.7. B. was known in early times, being extracted, under the name of tincal, from the salt lakes of Tibet. It is also found in California and Nevada, and in the desert of Atacama in S. America. It is manufactured from boric acid, which is fused with half its weight of sodium carbonate, the B. being dissolved out with warm water. On being fused B. forms a globule. It combines on fusing with the oxides of many metals, forming globules of characteristic colours, therefore providing a test for the detection of certain metals. B. is also used in the glazing of pottery and in glassmaking.

Borborus, genus of dipterous insects of the family Borboridae. The species are small, dark flies, with wings either clear or absent. They are found in marshy places and on putrid substances, and are always abundant about cucumber frames.

Borch, Gerard Ter, see TERBURG.

Borchgrevink, Carsten Egeberg (1864-1934), Norwegian explorer, b. at Christiania (Oslo); his father was Norwegian, a barrister by profession, his mother was Eng. He was educated at Gjertsen College; graduated Royal College, Tharandt, Saxony. When the *Antarctic* sailed from Melbourne in 1894 under Capt. Christensen, B. shipped as an ordinary seaman, and was one of the first men to set foot on the Antarctic continent. In 1898 he was placed in command of Sir George Newnes's *Southern Cross* expedition, and in 1902 investigated the volcanic disturbances in the W. Indies. See the

Report of the Sixth International Geographical Congress, London, 1895, pp. 169-75. He wrote *First on the Antarctic Continent* (1901) and *The Game of Norway* (1920-25). In 1930 he was awarded the Patron's Medal of the Royal Geographical Society of London.

Borda, Jean Charles de (1733-99), Fr. mathematician and physicist. He served in both the army and the navy and distinguished himself by the introduction of new methods and instruments connected with the sciences of navigation, astronomy, and geodesy. His most important invention was that of the reflecting circle. He was one of the men of science who framed the new system of weights and measures adopted in France under the Republican gov. He pub. *Description and Use of Circle of Reflection*, 1778, and *Table of Logarithms*, 1804.

Bordarii (from Low Lat. *borda*, a cottage), or Cotarii, were tenants under the feudal system, who, in return for menial services, chiefly field labour, possessed holdings of from 1 to 6 ac. They had neither oxen nor plough and were inferior in rank to the villeins, though they were certainly not slaves.

Bordo, Andrew, see BOORDE.

Bordeaux, city in the S.W. of France, the cap. of the dept. of Gironde, on the l. b. of the Garonne, 358 m. S.S.W. of Paris. Pop. 258,000. The suburb of La Bastide, which lies on the opposite side of the riv., is connected with B. by a modern stone bridge of 7 arches, and a railway bridge. It is one of the first industrial cities of France, and one of the foremost in the cultivation of arts and sciences. It is the seat of an archbishop. The old part of the tn. is distinguished by narrow, crooked streets, but the new quarters are very fine. Among the public squares may be mentioned the Place de la Quinconce, which is ornamented by huge statues of Montaigne and Montesquieu. The public buildings include the old cathedral of St. André, with a detached bell-tower, the church of St. Michel, the theatre, which is one of the finest in Europe, the hôtel de ville, etc. Some of the old gates of the city are still preserved. The univ. has 2700 students, the public institutions are of a high order, and there is a fine picture gallery and an observatory. B. is the third port of France both in foreign and coastwise trade, being surpassed only by Marseilles and Havre. The harbour is capable of accommodating 1000 ships of all sizes, and ships of 600 tons can enter at all tides. An additional port has been built at Balacran. Shipbuilding became the most important industry, whilst the wines of B. have been noted since the fourth century. The chief manufs. are liqueurs, vinegar, tobacco, sugar, chemicals, and glass; the chief imports salt fish, iron, coal, pottery, and machinery. B. was the Burdigala of the Romans, the cap. of Aquitania Secunda. It was repeatedly sacked in early times, but had a peaceful time as the cap. of the Eng. possessions

in S.W. France from 1152 to 1453. In the Second World War the Fr. Gov. under Reynaud moved to B. on June 14, 1940, after the entry of Ger. troops into Paris. The city was heavily bombed, and on June 20 Marshal Pétain, who had succeeded Reynaud, transferred the seat of gov. to Vichy after receiving the Ger. armistice terms. After the allied invasion of France in 1944, Ger. troops held out in the Gironde until April 1945, when they were attacked by Fr. troops supported by Amer. aircraft. Their resistance was crushed by April 20, and B. restored into Fr. hands. See WESTERN FRONT IN SECOND WORLD WAR.

Bordeaux, Duc de, see CHAMBORD, COMTE DE.

Bordeaux, Henry (b. 1870), Fr. novelist, was educated at Thonon College, the Sorbonne and the Paris Faculty of Law. He practised law, 1890-1900, then turned to literature. During the First World War he served in the army, becoming an officer of the Legion of Honour, and receiving many foreign orders. In 1919 he became a member of the Académie Française, and in the same year he lectured in London on Verdun, in the defence of which he took part. He is an honorary Docteur de l'Université de Montréal. A prolific writer, his works include *Le Pays natal*, 1920; *La Peur de vivre*, 1902; *Le Lac noir*, 1904; *La Croisée des chemins*, 1909; *La Robe de lin*, 1910; *La Maison*, 1913; *Les Captifs déliés*, 1917; *La Résurrection de la chair*, 1920; and *La Maison morte*, 1922; *Le Fantôme de la rue Michel Ange*, 1922; *Yanilé sous les cèdres*, 1923. Among more recent books may be mentioned *Murder Party*, 1931; his fiftieth novel, *Cendres chaudes*, 1938; and *La Sonate au clair de lune*, 1942.

Bordelais, former div. of France, bounded on the N. by La Saintonge; on the E. by Périgord and Agenais; on the S.E. by Bazadais, on the S. by Gascoigne, and on the W. by the gulf of Gascony. It was principally an eccles. div., having Bordeaux as its chief tn.

Borden, Sir Robert Laird (1854-1937), Canadian statesman and lawyer. Succeeded Sir Wilfrid Laurier after his defeat on the Reciprocity Bill at the general election in 1911. He was b. at Grand Pré, Nova Scotia. In 1878 he was called to the Bar and practised in Halifax, becoming eventually president of the Nova Scotia Barristers' Society. In 1896 he represented Halifax in Parliament, but lost his seat in 1904 and was elected for Carleton. In 1908, however, he was returned for both places, and from 1901 led the Conservative opposition. Responsible for Canada's offer, in 1912, of 3 battleships for the home country, a policy which was the subject of lively discussion. During the First World War he shouldered the chief share of the task of guiding Canadian affairs and was in office as Prime Minister and secretary of state for external affairs throughout. In 1915 he was invited to attend meetings of the Brit. Cabinet in London, this being the first occasion on which a dominion statesman had been summoned to take

part in a Cabinet discussion in Great Britain. He was returned again at the general election of 1917. He attended the Imperial Conference in 1917 and 1918 and went to Paris as one of the Canadian representatives at the Inter-Allied Peace Conference of 1919. Resigned premiership in 1920. President of League of Nations Society in Canada in 1921-23. G.C.M.G., 1914; P.C., 1912.

Bordenstown, bor. of Burlington co., New Jersey, U.S.A., situated on the Delaware R. It is 28 m. by rail or water from Philadelphia, and 6 m. by rail from Trenton. It is noted for its iron works and shipbuilding yards. There are also large shirt factories. Pop. 6000.

Border Regt., The (1st Battalion, formerly 34th Foot), was raised in 1702, and almost immediately went on active service to Spain, then later under Marlborough. It was present at Dettingen and Fontenoy. For its conspicuous behaviour at Fontenoy, was awarded a laurel wreath, a unique distinction. It served in the Peninsular and Crimean wars and Indian mutiny. The 2nd Battalion (formerly 55th Foot) was raised in 1755, and went to America in 1757; fought in the war of Independence and campaigns in W. Indies, China, and Crimea. In 1881 the 34th and 55th were linked to form the Border Regiment. During the First World War it raised 16 battalions, which served in France, Flanders, Italy, Macedonia, Gallipoli, Egypt, and N.W. Frontier, India. In the Second World War the B. R. fought in France and Belgium and in N.W. Europe generally. They played a distinguished part in the battle of Arrahm in Sept. 1944. Other units, in the Fourteenth Army (q.v.), were part of Wingate's Chindits and also fought in the Irawadi R. battles.

Border, The, name applied to that stretch of country on both sides of the frontier between England and Scotland. The term has 3 distinct uses, and can be applied historically, geographically, and in a literary sense. The actual boundary between the 2 countries is a line beginning about 3 m. W. of Berwick, along the line of the Tweed to the Cheviot Hills, which become for some 35 m. the line of demarcation; hence the boundary continues along the line of the Liddel and the Esk for a short distance, and thence to the line of the Sark, which it follows to the Solway Firth. The actual length of the boundary line is 108 m., whilst by taking the distance as the crow flies the distance is not more than 70 m. At the extreme E. of this line is the ter. known as the Liberties of Berwick, an area of about 8 sq. m. which encloses the present tn. of Berwick. The only Eng. B. cos. are Northumberland and Cumberland, but on the Scottish side, in addition to the actual B. cos. of Berwick, Roxburgh, and Dumfries, there are included in the term also the cos. of Selkirk and Peebles, which have always historically been included. The country on the Eng. side of the B. is chiefly bleak and rugged moorland, useful only for the pasturage of sheep

and cattle, but on the N. side the physical appearance presents a vast difference. Here one finds great stretches of fertile land, a country of dales and valleys, possessing a natural beauty and famous for its picturesqueness. The B. country is watered on the N. side by the Tweed, the Whiteadder, Leet, Kale, Jed, Kershope, Liddel, Esk, and Sark, whilst on the Eng. side are found the Rs. Till, Boumont, Coquet, Rede, and the N. Tyne. The hist. of the B. was for some 1500 years extremely stormy. During the Rom. occupation the original inhab. and the Picts of still further N. were held in check by the Rom. walls. The earliest inhab. seem to have been the Brigantes, who held both sides of the B., and were a fierce and warlike tribe. They probably gave trouble to the Roms., but eventually the Roms. brought them at least to nominal subjection, and built the wall of Antoninus from the Clyde to the Forth. But even at this early date we can regard the B. as a dist. with a distinct hist. of its own, since the land between the 2 walls (Hadrian's and Antoninus's) was never actually conquered, and never really held by the Roms. The evacuation of Britain by the Roms. resulted in the B. country becoming the battleground for the invaders from the N. (the Picts), the invaders from over the sea (the Angles), and the hapless Britons, until finally the whole of the B. country was divided into the kingdoms of Strathclyde, Bernicia, and Deira. Bernicia and Deira were later united to form the kingdom which stretched from the Humber to the Forth. But this div. brought with it no peace. The country continued to be agitated by the constant warfare between Scot and Angle, and later the Viking, seeking lands for himself, joined in the struggle. The hist. of the B. between the sixth and the eleventh century is the hist. of continued warfare, raids, and bloodshed. The struggle, which had its origin in the quarrels of more or less petty tribes, began, with the development of the tribes into nations, to assume a national aspect. The struggle was now one for the permanent possession of the valley of the Tweed, and we must bear in mind that the ter. of Northumbria for a long time stretched to the Forth. Finally, the line of Scottish kings sprung from the Dalriadan, Malcolm Canmore, snatched Lothian from the hands of the Eng., and laid hands also upon Cumberland, which, though nominally ceded to the Norman kings in the reign of the Red William, was nevertheless contested between the two nations for some very considerable time. The constant warfare hardly permitted the development of the country; however, this development had to a very large extent gone on, especially on the Scottish side. The Celtic Church had been responsible for this to a very large extent. With the coming of the Celtic monks, churches had sprung up in the wilds of Northumberland, and in the fertile valleys and dales of the Scottish lands. Monastery and church dotted the countryside, and on the Scottish side

grew up the large and flourishing tns. of Berwick, Jedburgh, and Roxburgh. But the death of Alexander III. in 1286 plunged Scotland and England into the war of the succession, and the determined efforts of Edward I. to achieve his dream of a united Great Britain made the B. the battlefield of the two countries. The country was harried and ransacked by both sides; the destruction of Berwick was compensated for by the ravages of Wallace in the neighbourhood of Hexham. Northumberland was practically laid waste, the tns. of Roxburgh and Jedburgh fell into the general ruin, and from that time until the beginning of the seventeenth century the B. can be said never to have been at peace. Many battles took place here, amongst the more important of which may be mentioned Halidon Hill (1333), Otterburn (1388), Nisbet (1402), Homildon (1402), Heddeley Moor (1484), Flodden (1513), Solway Moss (1542), and Ancrum Moor (1544)—these in addition to the many battles and skirmishes which took place between the B. families, and which partook more of the character of family feuds. The important defeat of Montrose at Philiphaugh by Gen. Leslie also belongs to the hist. of the B. The B. were kept in peace more or less by the building of numerous castles, which were to overawe the moss-troopers and the freebooters of the neighbourhood. The B. were during the fifteenth and sixteenth centuries administered by wardens appointed respectively by the sovereigns of England and Scotland, the B. at this time being divided into three marches, over each of which ruled, practically as sovereigns, the Eng. and Scottish wardens. When in 1603 James VI. of Scotland succeeded to the throne of England as James I., peace on the B. became more possible. James I. even desired to do away with the name B., but the term has always been kept. The castles, however, were dismantled, the garrisons reduced, and gradually the B. became accustomed to peace. A number of fortresses, important in B. warfare, remain as pleasant little tns. at the present day, but a number are in ruins.

The B. produced a distinct literature of its own. The B. ballads sang the deeds of the B. heroes, the men the breath of whose nostrils was the breath of battle, the heroes who led their little bands of followers to attempt deeds which a larger army would not have dared to attempt. The ballad of *Chevy Chase* is typical of the B. minstrelsy. But the open life of the Borderer found expression also in the more sentimental side of literature, and the beauties of his native hill and dale did not escape him; he sings of the beauty of his native heath with the same splendour of imagination and with the same poetic spell around him, as he does the deeds of his forbears. Sir Walter Scott rescued the ballad poetry, and the traditions of the B. literature found expression in James Hogg (the Ettrick Shepherd), John Wilson (Christopher North), and John Mackay Wilson.

Border Town, small post tn. of S.

Australia, situated in the co. of Buckingham, about 180 m. S.E. by S. from Adelaide.

Border Warrant, an old form of process in Scots law, used for detaining the person of an absconding Eng. debtor.

Bordes, Charles (1863-1909), Fr. musical composer, b. at La Roche-Corbon, 12 May. Studied in Paris with Marmontel and César Franck, but only took up music professionally in 1887, beginning as a church organist and choirmaster. Appointed choirmaster of Saint-Gervais, Paris, he organised the world-famous choir, the Chanteurs de Saint-Gervais. His work in restoring to Fr. church music the tradition of plainsong and the music of old masters heralded the reforms of Pius X. In 1900 Schola Cantorum, of which he was co-founder with Guilmant and d'Indy (1894), became a high school of music. The catalogue of his works includes, besides church music, some instrumental music, among which may be mentioned *Rapsodie basque* (1889) and *Les Trois Vagues* (an unfinished lyric drama).

Bordighera, It. winter resort, situated in Imperia (Porto Maupizio), Liguria, and has a commanding position on the summit of hills from 500 to 1000 ft. high, overlooking the Mediterranean Sea. Lemons, flowers, palms, etc., are exported. Rom. remains are found in the vicinity. Pop. 6000.

Bordj-bou-Arreridj, tn. of Algeria, situated in the dept. of Constantine, on the high plateau of Madjana. Cattle are reared, and grain is grown in the dist. Pop. 12,000.

Bordj-Menafel, tn. of Algeria, in the dept. of Algiers and the dist. of Tizi-buzon; pop. 18,000.

Bordone, Paris (1500-71), It. painter of the Venetian school, a pupil of Titian. He was the fashionable portrait-painter of Venice, and in 1538 was invited to France by Francis I., whose portrait he painted. He painted the portraits also of many ladies of the court, of the Duc de Guise, and of many noblemen; but none of these portraits is to be found in Fr. collections. Though portraiture was his forte, he also painted scenes from mythology, allegories, and religious subjects. His great painting is 'The Fisherman presenting the Ring of St. Mark to the Doge,' in the academy at Venice. The National Gallery has his 'Daphnis and Chloe,' and a portrait of a lady, and his 'Lady at her Toilet' is in Edinburgh. Other notable paintings are the 'Adoration of the Shepherds' (in Treviso Cathedral), some mythological pictures at the Villa Borghese, and a 'Madonna' in the Louvre. Others of his works are to be seen in Cremona, Milan, Genoa, Florence, etc. He had exceptional talent and is noted for his fine flesh tones.

Bordure, in heraldry, term denoting the border which surrounds the shield, and generally occupies one-fifth of the field. It sometimes used to bear a difference of a cadet, and the differentiating of cadets by Bs. according to fixed rules is still done in Scottish heraldry. A B. componée,

that is, divided into 16 small squares, denotes illegitimacy in Scotland; a B. wavy in England had later the same significance. A great variety is found in Bs.; they are engrailed, invected, wavy, and parted in many ways. A chief is sometimes carried over a B., but not when a mark of cadency. When a coat, bearing a B. is impaled with another B. the B. is omitted along the line of impalement.

Bore, or **Eagre**, phenomenon which occurs in some rivs. in spring-tides. At such times the inflowing water rises to a considerable height and moves along against the current like a wall. It is due to the fact that the vol. of the tidal wave is greater than the riv. can receive without being disturbed greatly. The height of the B. varies from 3 ft. to 12 ft. The latter height is attained by the B. of the Brahmaputra. In England Bs. may be observed in the Severn, the Trent, the Wye, and the Solway.

Bore (in fire-arms), see GUN.

Boreas, name for the N. wind. In Gk. mythology B., the son of Astræus and Eos, personified the N. wind, the coldest wind in Greece. He was brother of Hesperus, Notus, and Zephyrus, and had his habitation with them in a cave on Mt. Hæmus in Thrace. When, on the approach of Xerxes' fleet, the Athenians invoked his aid, he answered by destroying part of it, whereupon they built him an altar on the banks of the Ilissus.



BORECOLE

Borecole (*Brassica acephala*, derived from *B. oleracea*, the cabbage), cruciferous plant largely grown in Europe. It has curly leaves, and is valued as a winter vegetable for culinary use. It is also known as Scotch kail, curly greens, Ger. greens, and cow-cabbage.

Boree, an Australian tree, *Acacia pendula*. Yields a close-grained, violet-scented hardwood which is useful for cabinet-making.

Borel de Hauterive, Joseph Pétrus (1809-59), Fr. novelist and poet, b. of a

wealthy Fr. family which had been ruined by the Revolution. He was educated in Paris, and was intended to be an architect. He, however, soon gave up any attempt at making a living by architecture, and became a writer. He was one of the most devoted and extravagant followers of the Romantic school. Most of his life was spent either in Paris or in Algeria. His chief works are: *Rhapsodies* (poems), 1832; a vol. of short stories, *Champavert*, 1833, in which his talents were best displayed; and *Madame Putiphar*, 1839, to which he wrote a preface in verse.

Borelli, Giovanni Alfonso (1608-79), It. physicist and mathematician, b. near Naples. In 1649 he became prof. of mathematics at the univ. of Messina and later of Pisa. He returned to Messina later, but having taken part in some political affair, was forced to retire to Rome, where he lived under the protection of Christina, queen of Sweden. He was the first to suggest the parabolic path of comets, and he was the founder of the latromathematical school, since he attempted to explain the movements of the body on mechanical principles. He wrote works on mathematical, medical, and astronomical subjects.

Borenius, Tancred (b. 1885), Finnish historian of art, b. at Wiborg, Finland, son of Carl B., sometime member of the Finnish Diet. Educated at Helsingfors Univ.; appointed prof. of hist. of art, Univ. College, London, 1922. Diplomatic representative of Finland in England, 1919. His numerous works include: *The Painters of Vicenza*, 1909; new ed. of *Crowe and Cavalcaselle's History of Painting in Italy*, 1912; *Catalogue of Visconti of Lee of Fareham's Collection*, 2 vols., 1923; *English Primitives*, 1924; *English Mediæval Painting*, 1927 (with E. W. Tristram); *Florentine Frescoes*, 1930; *Catalogue of the Pictures and Drawings in the Collection of the Earl of Harewood*, 1936; *English Painting in the XVIIIth Century*, 1938; *Italian Painting and later Italian Painting*, 1945; *Dutch Indoor Subjects*, 1946.

Borers, beetles which pierce the wood on which they feed and thus do much damage. There are many species contributed by such genera as *Anobium* and *Ptinus*. Also a family of fish (Myxiniidae) called hag-fishes (q.v.), borers, or slime-cels; have no suckers, but have 4 pairs of tentacles over the mouth and terminal nostril. Hags burrow right into fishes, devouring them until nothing is left but skin and bones. *Myxine*, with half a dozen gill-pouches but only 1 gill opening is a widely distributed genus. *M. glutinosa* of the N. Atlantic is troublesome to fishermen, having a preference for attacking fish already caught on lines. See also BORING SPONGES; BORING-WORM; TEREDO.

Boreus, genus of mecapterous insects included in the family Panorpidæ, and related to the scorpion-flies. They have biting mandibles and the wings are absent. *B. hiemalis* is a native of Europe and America and is found in the winter months only. It is about a

quarter of an in. long, and of a greenish colour with reddish legs.

Borgå, or Porvoo, tn. and seaport in the prov. of Nyland, Finland, situated on the R. Borgo, at the spot where it enters a part of the gulf of Finland. It is about 34 m. N.E. by rail from Helsinki. The trade is impeded by the shallowness of the bay. Leather and furs are the chief articles of commerce, and there are also manufs. of sail-cloth and tobacco. Here, in 1802, the Chamber of Deputies drew up the Constitution of Finland. In 1809 it was the seat of the Finnish Diet. At one time it was a rich and handsome city, but now it is decayed. Pop. 6000.

Borger, tn. and com. in the Netherlands, situated in the prov. of Drenthe, and about 11 m. S.E. by E. from Assen. Pop. 10,000.

Borgerhout, suburb of Antwerp, Belgium. Its manufs. are tobacco, candles, and tapestry. There are bleaching and dye works. Pop. 54,000.

Borgese, Giuseppe Antonio, It.-Amer. author, b. in Polizzi Generosa, Sicily, in 1882. He became prof. of Ger. literature at Rome Univ. in 1910, and in 1917 transferred to Milan Univ., where in 1926 he became prof. of the faculty of letters. He was active as journalist, critic, novelist, dramatist, and poet. At the early age of 20 he wrote a *History of Romantic Criticism*, and followed this by a study of the work of Gabriele D'Annunzio. In both of these the young student was inspired by the example of Benedetto Croce. In 1921 he pub. the book which estab. his reputation, the novel *Rube* (Eng. trans. 1923). In this book it. critics see a portrayal of the duel between the warlike idealism and the basic pacifism of the It. B. was an opponent of Fascism, and in 1931 left Italy for the U.S.A., where he became a naturalised Amer. on 1938. His first appointment was as prof. of literature at Smith's College, Massachusetts, and in 1936 he took the post of prof. of It. literature at Chicago Univ. Later books include: *On Dante Criticism*, 1936; *Goliath: the March of Fascism*, 1937; *Political Creeds and Machiavellian Heresy*, 1939; *Common Cause*, 1943.

Borghese, name of a celebrated It. family of Sienese origin, which is first prominent in the hist. of the republic of Siena at the beginning of the thirteenth century. One of its number settled in Rome during the sixteenth century, and a son of this member of the family became pope, with the title of Paul V., in 1605. The family fortunes were much advanced by the pope, who created a nephew prince of Vivero, and a little later the title of prince of Sulmona was conferred on the same nephew by the king of Spain. The son of this prince raised the family fortunes by his marriage with a daughter of the Aldobrandini family, one of the oldest and richest families of Rome. Camillo Filippo Ludovico, Prince B., married the sister of the Emperor Napoleon in 1803. He was made duke of Guastalla, and later governor of the provs. of Piedmont and

Genoa. He sold the art treasures of his house to Napoleon. After the fall from power of Napoleon he retired to Florence, where he lived until his death in 1832. The B. palace (*q.v.*) at Rome is one of the most magnificent of the buildings of that city.

Borghese, Giovanni Ventura (1640-1708), It. painter, pupil of Pietro da Cortona, whom he helped in some of his chief works at Rome. After his master's death B. completed some of his unfinished paintings. In the church of San Niccolò da Tolentino are his pictures 'The Annunciation' and 'The Virgin Mary crowned by Angels.' Four scenes from the life of

summer residence at Rome of the Borghesi till 1902, outside Porta del Popolo; built by Cardinal Scipione Caffarelli-Borghese on the Cenci estate, after plans by Giovanni Vansanzio (early seventeenth century). It has a magnificent park of over 200 ac. Its grand collection of works of art was sold to Napoleon by Prince Camillo Borghese, 1806. Some of these were restored in 1815, the remainder are in the Louvre. A new collection of sculptures and pictures was formed later. Among the treasures contained are Algarde's 'Sleep,' and Canova's famous statue of the reclining figure of Pauline Borghese. Both villa and park became



W. F. Mansell

THE VILLA BORGHESI, ROME

St. Catherine in the church of Città di Castello are considered his finest works.

Borghese Palace, one of the most magnificent buildings in Rome, in the Borghese Square, th. residence of the Borghesi. Built between 1590 and 1607 by Martino Lunghi and Flaminio Ponzio, and known, from its shape, as 'Il Cembalo.' The inner court had 2 tiers of granite colonnades, with Doric columns below and Corinthian above. In it are huge ant. statues of Sabina, Julia, and Ceres. Its wonderful collection of art treasures was sold by public auction, 1892, by Prince Paolo Borghese. Many of its fine pictures have been removed to the Villa Borghese (now Villa Umberto I.) (*q.v.*), belonging to the It. state. Pope Leo XIII. acquired the important family archives for the Vatican. The picture gallery still includes a Madonna of Botticelli, and 1 by Lorenzo di Credi; 2 Evangelists by Michelangelo; 4 paintings of Raphael (1 being 'The Burial of Jesus'); Titian's 'Sacred and Profane Love,' and his 'Three Graces'; Correggio's 'Danaë'; Van Dyck's 'Christ on the Cross' and portrait of Maria de' Medici. There are also canvases of Andrea del Sarto.

Borghese, Villa (now Villa Umberto I.),

the property of the It. state, 1902. See M. L. Gothein, *History of Garden Art* (Eng. trans.), 1928.

Borghesi, Bartolommeo (1781-1860), It. savant, b. at Savignano, near Rimini. He was a student of the documents of medieval times, and so ruined his eyesight by close reading that he had to give up his study of documents, and turn to numismatics. He was responsible for the arranging and cataloguing of the coins of the Vatican. He retired from Rome in 1821 to San Marino, where he spent the rest of his life, taking some little part in the politics of that republic. He estab. a reputation by his great work, *Nuovi Frammenti dei Fasti Consolari Capitolini*, 1820. His works on numismatics also added to his reputation. His complete works were pub. by order of the Emperor Napoleon III., the first vol. appearing in 1862, and the tenth and last in 1897.

Borghesi, Ippolito, It. painter, native of Naples (*A.* towards end of sixteenth or beginning of seventeenth century), pupil of Francesco Curia. Painted historical and religious subjects; imitated Raphael and Andrea del Sarto. Chief works: Altar-piece in chapel of Monte di Pietà at Naples ('Assumption of the

Virgin'), and another in San Lorenzo at Perugia.

Borghetto, It. vil. in the prov. of Verona, situated on the banks of the R. Mincio. It was the scene of a victory of Bonaparte over the Austrian gen., Beaulieu, in 1796. Pop. 500.

Borghorst vil. of Germany, in the prov. of Westphalia, situated 13½ m. N.W. of Münster. It has manufs. of cotton goods. Pop. 9000.

Borgia, a family originally from Jativa in the prov. of Valencia, Spain. The name figures among the Caballeros de la Conquista at the time of the expulsion of the Moors in 1238. One of its members, Alonso de Borja (1378-1458), was a bishop and private secretary to Alfonso of Aragon, and accompanied that monarch to Naples. This Borja in 1455 became pope as Calixtus III. and settled a number of his family in Italy. His nephew, Rodrigo de Borja (1431-1503), also became pope under title of Alexander VI. (q.v.), and from that time the principal seat of the family was in Italy, and the name was changed to B. Before Alexander became pope he had a number of children by a Rom. girl, who was known as Vanozza, but whose real name was Giovanna or Cattanei. Two of these children, Lucrezia and Cesare, were destined to play important parts, and acquired unhappy renown.

Cesare B., b. in Apr. 1476. He possessed unbounded ambition, never-flagging energy, a contempt for all laws, divine or human, extraordinary powers of generalship and administration. A league of all Italy and of most of the powerful European sovereigns was required to check Cesare's rash projects. From birth he was vowed to the priesthood, and he became a cardinal when only 17 years old. He early resolved to surmount all obstacles to his ambition. He shrank neither from sacrilege nor from murder. He procured the murder of his own brother Giovanni, duke of Gandia, whom he afterwards succeeded as captain-general of the Church. Whilst his father, Alexander VI., was crushing the feudal power of the barons in the Romagna, Cesare undertook the task of recovering all the fiefs along the Adriatic coast which had ceased to acknowledge the overlordship of the Holy See. He made himself master of the Romagna, Perugia, Siena, Piombino, the duchy of Urbino. He was named duke of Romagna by the pope, and was about to invade Bologna when he and his father were suddenly taken ill while at a banquet given by the cardinal of Corneto. Alexander d. (1503), but Cesare, owing to his strong constitution, recovered. There, however, was an end of his projects. On the election of his enemy Pius III. to the papal seat Cesare surrendered at Naples. He was removed to Valencia and later to Medina del Campo. He escaped from the latter place and went to the court of Navarre, where he was placed in command of the royal forces, but was killed in battle, March 12, 1507. He was a friend of art, and befriended Leonardo da Vinci. His memory remains in execra-

tion, although the people whom he governed regarded him as an upright and able, though severe, administrator. It was to him that Machiavelli dedicated his treatise *The Prince*.

Lucrezia B. (1480-1519), duchess of Ferrara; was married first to Giovanni Sforza, secondly to the duke of Bisceglie, and thirdly to the duke of Ferrara. Historical evidence fails to confirm the picturesque crimes imputed to her in relation to her supposed natural son, Gennaro. She left behind a reputation for learning and beauty, and is said to have enjoyed the respect of her subjects. See F. B. Corvo, *Chronicles of the House of Borgia*, 1901; M. B. Ryley, *Queens of the Renaissance*, 1907; R. Sabatini, *The Life of César Borgia*, 1912; L. Collison-Morley, *The Story of the Borgias*, 1932; A. Schirokauer, *Lucretia Borgia*, 1937; N. Balchin, *The Borgia Testament*, 1948.

Borgia, Francesco (1510-72), third general of the Jesuit order, the duties of which post he prosecuted with the utmost zeal and prudence. Beatified by Pope Urban VIII. and canonised by Clement X. in 1671.

Borglum, John Gutzon de la Methe, Amer. sculptor, b. in Idaho, 1867. Educated in art at the school of the San Francisco Art Association. His works are chiefly remarkable for their enormous size—especially that on the rock of Stone Mt., Georgia, a memorial to the Confederate Army.

Borgne, lake in the U.S.A., situated in the S.E. of Louisiana. It is about 25 m. wide, and touches the gulf of Mexico on the E.

Borgo, name given to a number of tns. and vils. in Italy and the S. Tyrol. It indicates the growth of a tn. or vil. around a castle or castellated rock, the original B.

B. San Donnino, a walled tn. in the prov. of Parma, Italy, now Fidenza (q.v.).

B. San Sepolcro, tn. and episcopal see in prov. of Arezzo in Tuscany, 29 m. N.E. of Arezzo on R. Tiber. It is at the foot of Monte Maggiore and is still surrounded by the medieval tn. walls. Bp. of Piero della Francesca and Raffaello dal Colle. Pop. 4000.

Borgo (Finland), see BORGÅ.

Borgognone, Ambrogio (d. c. 1524), It. painter of the late fifteenth and early sixteenth centuries. He was a contemporary of Leonardo da Vinci, his real name being Ambrogio Stefani da Fossano. The name B. is probably due to the fact that he was closely associated with the Burgundian school of art. His chief claim to fame lies in the work of decoration which he did for the Certosa, the convent of the Carthusians at Pavia. After his return from Pavia to Milan he continued his work of church decoration, and we find him at a later date painting a series of frescoes for one of the great churches of the tn. He is not very well known as a painter, and references to him are very scarce. Two examples of his work at the Certosa are in the National Gallery.

Borgognone, Jacopo Cortesi (1621-76), It. painter, b. at St. Hippolite, Burgundy,

the son of a minor artist. Many of his most famous battle pictures record the achievements of his patron, Prince Matthias of Florence, and his best work is in the Palazzo Pitti at Florence. He also produced sev. sacred paintings. He spent the last part of his life in a Jesuit monastery.

Borgomanero, tn. situated in N. Italy. It is about 22 m. N.W. by N. from Novara by rail. Makes copper articles. Pop. 11,000.

Borgo Pass, pass in Rumania of 4000 ft. in altitude, which leads from the S.W. of Bukovina to Bistritz.

Borgotaro, tn. in Italy, situated 36 m. S.W. of Parma. Pop. 2500.

Borgström, Hjalmar (1864-1925), Norwegian musical composer and critic, b. at Christiania (Oslo). Regarded in Norway as the most eminent native composer after Sinding. He produced numerous compositions, including symphonies, symphonic poems, chamber music, piano pieces, etc. His symphonic poem *Hamlet* is the work which made him best known, though the poem *Tanken (Thought)* is regarded as his most important work. Other symphonic poems are *Jesus in Gethsemane* and *John Gabriel Borkman* (after Ibsen).

Borgu, an extensive dist. in Africa, partly in Dahomey, Fr. Equatorial Africa, and partly in Nigeria.

Boric Acid, see BORACIC ACID.

Borinage, coal-mining dist. of Belgium, lying around Mons.

Boring, the operation by which a hole of small diameter is made in any direction, usually vertically downwards, through earth, rock, etc. In most instances the object of B. is to procure knowledge of the kind, disposition, and depth of the rocks below the surface. The aim may be purely scientific, as at Leipzig, where a hole 8265 ft. in depth was bored for the purpose of ascertaining the depth and succession of the underlying strata, thus amplifying knowledge secured from examination of faults, outcrops, etc. More often B. has for its object the acquirement of knowledge of economic value, as in prospecting for minerals. In an area where the existence of beds of minerals is suspected, holes are bored at various points. An indication of the disposition of mineral beds is thus given, and if the number of Bs. is sufficient, a fairly reliable map can be drawn. Even after the existence of minerals in paying quantity is proved, it is necessary to ascertain the nature of the overlying strata, so that the difficulties of sinking shafts can be estimated. It may be said that B. is always a necessary preliminary to mining operations, as it is for civil engineering work, involving extensive excavation or requiring foundations of particular stability. The bore-hole often becomes a permanent well in cases where water or oil rises from the lower strata by its own pressure. (See ARTESIAN WELLS; PETROLEUM.) Certain salt-beds are most economically worked by introducing water through the bore-hole for the purpose of dissolving the salt, and then pumping the brine to the surface. The apparatus required for

B. depends upon the nature of the rock and the depth to which the hole extends. For shallow B. through soft soil up to about 100 ft. in depth augers on the principle of the carpenter's auger are employed. The tool is mounted on jointed rods; the earth is enclosed by the spiral, brought to the surface, and removed. This common wood auger may have a diameter of 1½ to 2½ in. and is usually started by 1-man power but, after being sunk a short distance, 2 or more men may be employed. During the process of B., samples are brought up and recorded together with their distances below the surface. Tools are also used which on turning enclose the earth in a metal pod or cylinder. In working on hard rock, drive-pipes are used. These consist of jointed tubes, the lowermost carrying a sharp steel circular cutting edge, and the uppermost for the time being having a screwed-on surface for hammering. For deeper B. a drill is used. This is mounted on jointed rods and operates by percussion and rotation, the rods being slightly turned at each blow. When the weight of the rods becomes considerable, a wooden spring-beam is often used. This consists of a pole about 30 ft. long and tapering to about 6 in. at the small end. The butt is fixed by means of a heap of stones, and it has another support about 10 ft. from the fixed end. This allows a springing up-and-down movement which is communicated to the rods and minimises the labour of the men. The tool is also fitted with a sliding link, as too great rigidity would involve excessive breakage of the rods. The disadvantage of rods is that much time and labour are required to lift them for the purpose of examining the tool or removing the broken rock. The latter operation is carried out by a 'bailer,' a tube with an inwardly opening valve at the bottom. The tube is dashed up and down a few times and the debris brought to the surface. The work of B. is made less tedious by using rods instead of rods. The drill is kept dropping by its own weight on the rock, and if it is necessary to raise the tool, the winding up of the rope is not a lengthy operation. Lost tools and broken rods have to be fished for by special apparatus. The most elaborate and efficient B. apparatus comprises a diamond drill at the end of a series of jointed tubes. The drill consists of a bit of soft steel set with about 8 diamonds of about 2 carats each. The drill is rotated by an engine geared so that the drill is advanced slightly at each revolution. The rocky core may be lifted for examination, and a stream of water forced down the tube and rising between the rock and the tube keeps the apparatus clear of debris. See S. H. Cox, *Prospecting for Minerals*, 1903; C. Isler, *Well-boring for Water, Brine, and Oil*, 1921.

Boring Sponges (*Ciona*), species of siliceous sponges (*Demospongiae*). They excavate tunnels in limestone rocks and do considerable damage to jetties, breakwaters, etc. Oyster-shells will often be found to have been perforated by them.

Boring-worm (*Polydora ciliata*), species of marine bristle-worm (Polychæta). They inhabit U-shaped tunnels which they excavate in the rocks.

Boris III (Boris Clément Robert Marie Pie Louis Stanislaus Xavier) (1894-1943), king or tsar of Bulgaria, b. at Sofia, eldest son of Ferdinand, prince (later tsar) of Bulgaria, whose position was then (1894) disputed. B.'s mother was Princess Marie Louise of Bourbon-Parma. After his birth he was proclaimed prince of Tirnova. To win over Russia, Ferdinand, a Roman Catholic scion of the Coburg family, had his heir converted, at the age of 2, to the Gk. Orthodox Church. Failing to obtain permission of the pope, he stood excommunicate by his own act. B. had a good education in politics, literature, and science, and was sent to the military academy at Sofia. He was a great polyglot, a first-rate naturalist and botanist. Curiously enough he was also a fully certificated engine-driver—he enjoyed driving railway trains in his own country and in England when he visited it. He served as a major in the war against Turkey, 1912. In First World War he served on his father's staff against the arms and allies of his imperial godfather. He succeeded to the throne on the abdication of Ferdinand, Oct. 3, 1918. In 1930 he married Giovanna, the It. royal princess. His first child, Princess Marie Louise, was b. in 1933 and a son and heir, Prince Simeon, in 1937, who succeeded him in 1943. He narrowly escaped death in 1924 at the hands of an armed band and again by a bomb thrown by Communists in the St. Nedelin Cathedral, when many of the congregation, largely official persons, were killed. In the ensuing 10 years B. improved his position by his refusal to encourage political persecution in the tradition of Stam-buliski the dictator and his successor Prof. Tzankov, and in 1933, by a visit to King Alexander of Yugoslavia, when the long-standing feud between the 2 countries seemed to be composed. But though he wished for better relations with his Balkan neighbours he adhered to Bulgarian territorial claims, and after Alexander's assassination, his attitude towards Yugoslavia cooled and he thereby alienated the sympathy of the Macedonian elements in Bulgaria. Nor did his domestic policy please the army, which was largely Macedonian and revolutionary in outlook. In 1934 a military coup overthrew the gov. of Agrarians and Democrats and B. was once more in danger of dethronement; but his popularity with the peasantry and his diplomacy, coupled with the dissensions in the army, saved him and the militarist combination collapsed. He made his first great blunder in violating the constitution by refusing to restore the old party system. In 1938 he was successful in securing the release of Bulgaria from the punitive clauses of the treaty of Neuilly. War now threatened Europe again and B. thought of bringing Bulgaria into the orbit of the W. powers, but his diplomacy was misconceived and he

played into the hands of his Germanophil ministers. Moreover, on the outbreak of war, Bulgaria had no other market for her produce than Germany; the army was entirely dependent on Ger. arms and had few of them, and the general staff was largely pro-Ger.; and Nazi intrigue was rife. B.'s position was now most precarious, for with the fall of France and Rumania under Ger. 'protection' his country was exposed to attack. He temporised, and at length collaborated infamously with the Axis against his Yugoslav and Gk. neighbours with whom his gov. had concluded agreements of non-aggression. To oblige his Axis patrons B. declared war on Great Britain and the U.S.A. When the tide turned against the Axis in 1943 there were signs that B., always cunning and resourceful, was contemplating a coup with the help of elements of the army; but he died shortly after paying a visit to Hitler, whether from natural causes or whether at the hands of Ger. or domestic enemies is uncertain. An unscrupulous opportunism marked all his tortuous course throughout the 25 years of his troubled reign.

Boris Fedorovitch Godunov (1551-1605), tsar of Muscovy, the most famous member of a Tartar family now extinct. In his youth he was at the court of Ivan the Terrible, and in 1571 he married Maria, the daughter of Ivan's favourite, Mal'yata Skuratov. He was raised to the rank of boyar on the marriage of his sister to the Tzarevitch Theodore. When Theodore succeeded to the throne in 1584, B. was appointed guardian, with Nikita Romanovitch. A rebellion in favour of the younger son of the tsar, Demetrius, was frustrated by B., and on the occasion of Theodore's coronation the former was loaded with honours. The death in 1584 of his co-guardian left B. the most powerful personage in the kingdom. A conspiracy against him of the most prominent nobles, jealous of his success, was a failure, and only enhanced his power. From this time B. was the ruler of Russia, and the direction of affairs was in his hands. His policy was always in favour of peace, and he showed judgment in his attitude towards foreign powers. He encouraged Eng. merchants by exempting them from tolls, and maintained an independent attitude towards Turkey. He created the first Russian patriarchate at Moscow, thus giving autonomy to the Russian Church; and he fortified numbers of tns. on the N.E. and S.E. borders, to check the depredations of the Finnic and Tartar tribes. The ukaz of 1587 forbade the peasants to change their masters; its object was to obtain revenue, but its effect was to render the peasants serfs. On the death of Theodore on Jan. 7, 1598, B. was unanimously elected tsar by the popular assembly. Opera by Mussorgsky.

Borislav, see BERLISLAV.

Borisoglebsk, tn. of the R.S.F.S.R. on the R. Vorona, 120 m. S.E. of Voronezh, with which it is connected by railway. Being in the black soil area, it is a centre of trade in grain, cattle, and wool. Pop. 52,000.

Borisov, tn. of Byelorussia on the R. Beresina, 50 m. N.E. of Minsk, with which it is connected by railway. There are tanneries and tobacco manufs. It was near B. that Napoleon made his crossing of the Beresina R. in Nov. 1812. Pop. 19,000.

Borisovka, tn. of the R.S.F.S.R., 80 m. S. of Kursk. There are tanneries and steam mills, and a trade in corn, leather, etc. Pop. 17,000.

Borja, anct. tn. of Spain, situated in the prov. of Saragossa. It has manufs. of soap, woollen materials, and brandy. Pop. 6000.

Börjesson, Johan (1790-1866), Swedish poet and dramatist. It was in 1846 that he pub. the first and best of his dramas, *Erik XIV.* He was chosen a member of the Academy in 1861. His dramas include, besides *Erik XIV.*, *Erik XIV.'s Son*, 1847, and *Solen Sjunker*, 1856; his best-known lyrical work is in *Blommor och Tårar på en Döters Graf*, 1854.

Borkhausia, see *BARCKHAUSIA*.

Borkum, is. in the N. Sea, belonging to Germany, and in the prov. of Hanover. It is one of the E. Frisian group, and is situated between the E. and W. arms of the Ems estuary. The is. is about 5 m. long, and half as wide. Pop. 3000. There is good pasture land for cattle, and numerous sea-birds find a breeding place upon it. It became a popular health resort, but is more noteworthy as part of the Ger. coast defence system. The dismantling of the is.'s defences after the First World War was incomplete, and the gun emplacements were not destroyed. During the Second World War the is. was heavily defended, principally by the Coronal battery of 4 11-in. guns and some 7 other batteries, including anti-aircraft guns. There were 16 radar stations, and the anti-aircraft defences of the is. claimed to have shot down over 100 allied planes. After the collapse of Germany in 1945, the total demolition of the defences of B. was put in hand.

Borlase, William (1635-1772), Eng. antiquary; educated Exeter College, Oxford. He was presented in 1722 to a living near Penzance to which the vicarage of St. Just was added in 1732. He pub. in his *Philosophical Transactions* an essay on Cornish diamonds, and was made an F.R.S. in 1750. He subsequently produced sev. works, including *Antiquities of Cornwall* (1754). He was made an LL.D. in 1766. He presented collections to the Ashmolean Museum.

Borley, vil. of Essex, England, 2½ m. N.W. of Sudbury. It is noted for its haunted rectory, destroyed by fire in 1929. Pop. (with Liston), 200.

Bormann, Martin Ludwig (1900-1945), Ger. Nazi leader. He joined the Nazi party in 1925, and in 1933 became chief of staff to Rudolf Hess, later succeeding him as third deputy to Hitler. After the defeat of Germany, he was missing and presumed dead, although tried in absence as a war criminal at Nuremberg.

Bormio, tn. in the valley of the Adda, Sondrio prov., N. Italy. It is nearly

5000 ft. in alt., and noted for its hot sulphur and saline springs. Pop. 2500.

Born, Bertrand, see *BERTRAN DE BORN*.

Born, Max (b. 1882), Ger. physicist; was appointed lecturer in physics at Göttingen Univ. in 1909, and subsequently occupied in succession the chairs of theoretical physics at the univs. of Berlin (1915), Frankfurt (1919), Göttingen (1921). In 1933 he came to England and became a lecturer at Gonville and Caius College, Cambridge, and was appointed Tait prof. of natural philosophy at Edinburgh in 1936. His most important work is related to the mathematical theory of crystal structures and the vibrations associated with them.

Borna, tn. of Germany, on the R. Wirha, 17 m. S.E. by rail from Leipzig. Its manufs. are shoes and boots, and pianoforte felt. There are iron works, and peat cutting forms a big industry. Pop. 14,500.

Börne, Karl Ludwig (1786-1837), Ger. political writer and satirist, b. at Frankfurt-on-Main, of Jewish parentage. He studied medicine at Berlin under a physician named Markus Herz. From 1807 he studied constitutional law and political economy at Heidelberg and Giessen. He was made police actuary on his return to Frankfurt in 1811, where he remained until 1814. In 1818 he became a convert to Lutheran Protestantism, changing his name from Löß Baruch to Ludwig Börne. From 1818 to 1821 he ed. *Die Wage*, which was suppressed by the police authorities. His views are fully developed in his *Briefe aus Paris*, in which he reproaches the Ger. people with every kind of vice and folly. He died in Paris of consumption. He was a bitter enemy of Heine.

Borneo, is. in the Malay Archipelago. It is about 5 times as large as England and Wales, having an area of 284,000 sq. m., and is the third largest is. in the world after Greenland and New Guinea. Its boundaries on the N. and W. are the gulf of Siam and China Sea; on the E. the sea of Sulu and Macassar Strait, and on the S. the sea of Java. B. is politically divided into 4 parts, viz. (1) Brit. N.B., having an area of 29,500 sq. m. and a pop. of 270,000; (2) Brunel, a Mohammedan state administered by the Straits Settlements, with an area of 2500 sq. m. and a pop. of 38,000; (3) Sarawak, also under Brit. protection (area 50,000 sq. m., pop. about 600,000); and (4) Dutch B., forming part of the Netherlands E. Indies. Of these the most valuable portion is Dutch B. Of the combined population about 5000 are Europeans. Generally speaking, the country is mountainous, with wide plains and low, marshy shores. There is no distinct nucleus where the mt. ranges branch out in different directions. The chief ranges are (1) the Kapuas, dividing Dutch B. from Sarawak, and stretching in a westerly direction; (2) the Schwaner Mts., which lie S. of the Kapuas; (3) the Muller chain, between the E. parts of the Madi plateau and the Kapuas. The Madi plateau is between the Kapuas and

Schwaner ranges. There is also a chain running eastward from the central mts., and terminating in the promontory known as Cape Kainor. A range in Brit. N.B. culminates in Mt. Kinabalu, 13,455 ft. The coasts, which are low and marshy, are rendered dangerous to navigation by numerous islets and rocks. There are no deep indentations. The mt. system has not yet been fully explored. B. is rich in minerals, and gold, copper, iron, tin,



E.N.A.

A WOMAN OF THE JUNGLE REGION OF BORNEO

diamonds, quicksilver, platinum, coal, and lignite have been found in abundance. Coal is mined extensively in all parts, and in Dutch B. there are 2 areas, one of 100, one of 70 sq. m. in area, each with an estimated yield of 300,000,000 tons. Petroleum is present in large quantities. The mt. framework of the whole is. consists of eruptive and crystalline rocks of high antiquity. Denudation by tropical rains has largely been responsible for the corrugated and crinkled appearance of the country in the S. The rivs. are numerous, and afford good means of communicating with the interior, some of them being navigable for hundreds of m. They are useful both as highways and as lines along which run the main arteries of pop. The chief rivs. are the Sarawak, Barito, Kapuas, the Rejang (navigable

for more than 100 m.), Baram, Limbang. The Kapuas is normally navigable for 300 m. The Barito in the S. traverses a rich, alluvial dist., but its course is impeded by rocks, waterfalls, and rapids. The rivs. of the S. are waters of capacious drainage. The chief drawback of the riv. system is that, on nearing the coast, many of the streams overflow, and form marshy and unhealthy regions. The intense heat of the tropical region is here mitigated by the ocean winds, and the climate is favourable to health, except in the marshy dists. Almost every wind brings rain, and as the is. lies within the region of the equatorial downpour, the vegetation is of the richest and most luxuriant kind. One of the chief trees is the sago-palm. The chief trade is in sago (more than half the world's sago comes from Borneo), camphor, cinnamon, nutmeg, sugar, cotton, rice, tobacco, indigo, pepper, coffee, rubber, and tortoise-shell. Coco-nut plantations have been started, and rubber, planted during the boom of 1909-10, is successfully grown, especially in Dutch B. The cap. of E. Dutch B. is Banjarmasin, which is the largest tn. of the is. Pop. 30,000. Sandakan and Jesselton are the 2 chief tns. of Brit. N.B. Brunel, the cap. of the prov. of Brunel, stands on the riv. of the same name. The riv. is very wide at this point, and the tn. may be said to be literally in the riv. Sarawak, or Kuching, is a substantial tn. with much trade. It has a pop. of 20,000. Pontianak is the cap. of the W. region under Dutch rule. The pop. of B. consists of 3 classes; (1) Dayaks or Dyaks, who are the original inhabs.; (2) the Mohammedans or Malays; and (3) the Chinese. The Dayaks live chiefly in the interior, and are employed in tillage, collecting gutta-percha, gums, gold dust, and wax; their former occupation of head-hunting is dying out. The Malays dwell on the coasts as traders and bold sailors. The Chinese, chiefly from Canton, have penetrated far into the interior chiefly in the N.W. They engage in trade and mining, the internal trade being almost entirely in their hands. There are about 150 m. of railway in Brit. N.B.; good roads are rare except in the S., but the prin. tns. are linked by telephone and telegraph and there are sev. wireless stations. B. began to be known to Europeans after 1511. By 1604 Dutch trading posts were estab. on the W. coast: the Brit. formed a settlement at Banjarmasin in 1698, but they were expelled by the Dutch, who remained in undisputed possession until Sir James Brooke became rajah of Sarawak in 1842. Brit. and Dutch boundaries were defined in 1891. During the Second World War, Jap. forces landed in Sarawak and on the N. coast of B. on Dec. 16, 1941. They took Tarakan, a small is. rich in oil, off the N.E. coast of B., on Jan. 7, 1942. On Jan. 24 Jap. forces landed in Balikpapan in S. Dutch B. So overwhelming was the Jap. mastery of the S. Pacific at this time that the large is. of B. was held with a garrison of only 1 div. Allied forces began the liberation of the Nether-

lands E. Indies by landing at Tarakan on May 2, 1945. On June 20, the Allies landed at Lutong, the refinery centre for the Sevia oilfield, in Sarawak. Brunel was recovered in the same month. Further landings were made in July at Balikpapan, where protracted fighting ensued and was still in progress when the Jap. surrender was made. See PACIFIC CAMPAIGNS, or FAR EASTERN FRONT, IN SECOND WORLD WAR.

See H. L. Roth, *The Natives of Sarawak and British North Borneo*, 2 vols., 1896; A. W. Nieuwenhuis, *Quer durch Borneo* (Leyden), 1904-7; S. Baring-Gould and C. A. Bampfylde, *History of Sarawak* (1839-1908), 1909; W. O. Krohn, *In Borneo Jungles*, 1927; F. W. Stapel (ed.), *Geschiedenis van Nederlandsch-Indie* (Amsterdam), 6 vols., 1939.

ter. was administered by a governor responsible to the company's court of directors in London. In 1946 the Brit. Gov. bought the rights of the company, and the administration of the ter. passed to the Colonial Office. (See also SARAWAK.) During the Second World War the ter. was in the occupation of the Jap. from 1941 to 1945. See PACIFIC FRONT IN THE SECOND WORLD WAR.

The recently discovered oilfield on Muara Is., between Brunel and Labuan is one of the largest in the Empire. After the Second World War it was considered desirable that the Crown, in consideration of compensation to the company, should assume direct responsibility for the gov. of the state of N. Borneo. The agreement for the transfer of Borneo sovereign rights to the Crown was concluded on



BORNHOLM

Danish Tourist Bureau

Borneo, British North, ter. at the N. end of the is. of B., area 29,500 sq. m., with a coast-line of over 900 m. The pop. of 270,000 consists mainly of Mohammedan settlers on the coast and of aboriginal tribes inland. The Bornean natives number about 205,000 (Dusuns 9800, Bajaus 3200, and Muruts 1800). In addition there are nearly 50,000 Chinese, over 11,000 natives of the Malay Archipelago, and some 400 Europeans. The E. coast has many valuable rivs., and the chief riv. on the W. is the Pradas. Kinabalu Mt. is 13,455 ft. high. The climate is pleasant. Sandakan (14,000), the cap., is 1 of the 4 excellent harbours. Rubber cultivation, over 5300 ac., is the chief industry. Other exports include tobacco, coal, copra, cutch, and timber. There is a railway (127 m.) from Jesselton on the W. coast to Melapap in the interior, with a branch from Beaufort to Weston on Brunel Bay. The ter. was bought from the sultan of Brunel in 1877 by the Brit. N. Borneo Co., incorporated by royal charter in 1881. A Brit. protectorate was estab. in 1888, and the

June 26, 1946, on which date Brit. N. Borneo became a Brit. Crown colony (like Sarawak, q.v.). Under this agreement the sum to be paid in respect of sovereign rights and assets was left to be settled by arbitration. The Crown was to pay £860,600 on Dec. 30, 1946, out of which sum the company was to redeem outstanding debentures, this sum being regarded as full or part satisfaction of the amount payable under the arbitration (save that whatever that amount, the company would not be called on to repay any part of the £860,600).

See Owen Rutter, *The Pagans of North Borneo*, 1930; Agnes Keith, *Land below the Wind*, 1939.

Borneo Camphor is obtained from a huge tree, native of Sumatra and Borneo. It is deposited in fissures in the wood, and these fissures have to be opened to obtain it, but it can also be obtained by the action of reducing agents.

Bornhem, or Bornheim, com. of Belgium, in the prov. of Antwerp, with a pop. of about 6000.

Bornholm, is. belonging to Denmark,

situated about 22 m. S.E. of Sweden, in the Baltic Sea. It is 24 m. long, and 16 wide. Its coast is very rocky, and the interior is hilly, especially in the N., where the cliffs reach a height of nearly 150 ft. The soil is fertile, and flax and hemp are grown, also oats. There are good pasture lands for cattle. Sev. quarries are in the neighbourhood, from which are obtained building stone, marble, and limestone, also a fine porcelain clay is worked. The industries are weaving, the making of clocks and watches, and earthenware. There are distilleries and breweries. Rönne is the chief tn., and there are a few small tns.; Neksö, Hasle, Svanke, Allinge, and Sandvig. Pop. 45,000. See H. P. B. Baerlein, *Baltic Paradise*, 1943.

Bornia, genus of fossil plants, occurs in the coal formation. It belongs to the *Equisetum*, and is now included in the genus *Archaeocalamites*. The best-known species is *B. (or A.) scrobivolulus*.

Borning, or **Boning**, is the method of making a line or surface level. It is accomplished by looking along 2 or more straight edges or a range of poles set up at regular intervals.

Bornite, metallic reddish-brown, brittle, copper-iron sulphide (formula Cu_3FeS_4), crystallising in the isometric system. It is named after Ignaz Born (1742-91) an Austrian metallurgist, who is notable for having discovered a method of extracting metals by amalgamation. A freshly fractured surface is copper-red to brown in colour, but soon develops an iridescent tarnish; whence the names *Erubescite* and *variegated copper-ore*. Cornish miners have also called the metal peacock ore. B. occurs as a primary mineral, but the most important source of this and other copper sulphides are ore-bodies, which have been enriched by secondary depositions from overlying minerals of the oxidation zone. Of this type are the important copper deposits of Butte, Montana, U.S.A., B. is also mined in S. Australia; Peru; the Caucasus; Mansfeld, Germany. S. and S.-W. Africa.

Bornu, a Central African dist. W. and S. of Lake Chad. Formerly a Negro kingdom extending to the borders of Egypt, it was first visited by Europeans in 1823. Towards the close of the nineteenth century it was divided between Great Britain, France, and Germany, being included in Nigeria, Fr. W. Africa, and the Cameroons. The Nigerian prov. of B. has an area of 33,650 sq. m., and a pop. of 700,000; its cap. is Maidugari. The area included in the Cameroons has, since the First World War, been under a Brit. mandate. It is a flat country with few elevations. The soil on the whole is fertile, for though water is lacking, it can usually be obtained by boring; and the region is said to be capable of great pastoral development. The regions adjoining rivs. are formed by alluvial deposits and are very fertile. Climate is hot and unhealthy. Chief products are indigo, cotton, yams, beans, and ground nuts. Pop. consists of various tribes, of which the chief are Kanuri, Kanembu,

Tebu, Musgu, Manga, and Hausa. They are mainly Mohammedan negroes, and trained horsemen. Kuka, or Kuku, a large walled tn. W. of Lake Chad, was the former cap.

Borobudur, which means 'The Great Buddha', are the ruins of a very wonderful Buddhist temple, situated in the middle of Java. It is to the W. of Surakarta, and close to the junction of the Progo with the Ello. It is estimated to be quite the most remarkable and splendid specimen of Buddhist architecture in the world. The religion of Buddha was brought into Java in very early times, and according to the chronicles of the Javanese, this temple was built in the seventh or eighth century. No inscriptions can be found concerning it, but it has been asserted that its completion would have been about 1400. It stands rather high, and was erected on volcanoes. It is a square pyramid, in circumference at the base 2080 ft., and in height about 118 ft. An immense cupola surmounts the building. There are altogether 7 walls, each very ornamental with statues, etc., and they are built like steps up a hill. Upon the outside there are 400 niches, with a huge statue of Buddha in each, and between these are carvings and bas-reliefs, etc.

Borodin, Alexander Porphyrevitch (1833-87), Russian composer, b. in St. Petersburg (now Leningrad), Oct. 31, and d. there in Feb. 1887. He displayed from childhood an equal liking for music and for science. His professional career was that of an expert chemist, but he devoted all his spare time to music. He first came under the influence of Balakirev and, after a period of study, wrote his first symphony—which shows very much the influence of Schumann, yet is in many respects characteristic of the later B. himself. He then began his opera *Prince Igor*, working at it at irregular intervals. This score, left incomplete, contains some of his finest music. His other works include a second symphony (1877) and a third unfinished symphony; 2 string quartets and a few minor pieces for the same combination of instruments; a dozen songs, some of great beauty; and the orchestral tone-poem *In the Steppes of Central Asia*. B. shows exquisite melody, even when the influence of folk-lore is evident, and his harmonies are both rich and effective; also, almost alone among Russians, he has the gift for utilising simple but remarkably apt polyphonic combinations of these melodies, as exemplified in the tone-piece mentioned above and in the 'Polovtsian Dances' in *Prince Igor*.

Borodin, Mikhail Markovitch, pseudonym of M. M. Grusenbergh (b. 1884). Russian diplomat. He joined the revolutionary party at the beginning of the century, and soon after the Russian revolution of 1917 he went to China as a Communist worker, becoming (1923) on the invitation of Sun Yat-Sen the political adviser to the central executive committee of the Kuomintang in Canton. Later he became head of a Communist

gov. estab. in Hankow, but being out-maneuvred by Chiang Kai-shek, he returned to Russia in 1927.

Borodino, vil. of the R.S.F.S.R., on the Kolotscha R., 70 m. from Moscow. Near this place a victory was gained over the Russians by Napoleon's army in 1812. The Russians lost 40,000 out of 121,000 men, and in Napoleon's army, 32,000 men were lost out of 130,000. The Tsar Nicholas I. caused a monument to be erected on the battlefield in memory of Prince Bagration. Pop. 200.

Boroëvič, von Bojna, Svetožar (1856-1920), Austro-Hungarian soldier, b. in Croatia. In the Galician campaign, 1914, he was a general of infantry and distinguished himself at the battle of Komarov. After the fall of Lemberg to the Russians, he was put in command of the Third Army in that sector, but in his ill-starred attempt to capture Przemyśl by frontal attack (Jan.-Feb. 1915) he was no more successful than the general he had superseded. This campaign having developed into the Carpathian battle with a serious Russian threat to the plains of Hungary, it was left to B. with the very effective help of von Mackensen to turn the tide, and Lemberg was recovered soon after the Russians had been repelled from the Carpathians. In 1917 B., now promoted to be commander-in-chief of the Austro-Hungarian armies on the Isonzo front, again attacked in concert with a Ger. army on his wing, his coadjutor this time being Otto von Below. The breakthrough was accomplished, but the Austrian armies under B. lacked staying power. B.'s First and Second Isonzo armies did eventually reach the Piave, but in June 1918 he was involved in the failure of the final and disastrous Austro-Hungarian offensive. His *Memoirs* were pub. in 1921. Died at Klagenfurt.

Boroglyceride, a mixture of boric acid with glycerol.

Boroimhe, see BRIAN.

Borolanite, a peculiar kind of gabbro (alkali-gabbro), containing the mineral leucite as the primary constituent. It is so called because it occurs in the geology of Loch Borolan, in the Scottish highlands.

Boron, non-metallic chemical element. It occurs in nature in the form of boric acid and its salts. The element when separated appears as a brown powder, which burns to form the trioxide B_2O_3 . When heated with sulphuric acid it oxidises to boric acid. It combines directly with fluorine on contact, and with chlorine and bromine on heating. The chloride is a colourless fuming liquid which readily decomposes in the presence of water, and the bromide has much the same properties. The sulphide also can be formed by direct union of the 2 elements on heating, and is also rapidly decomposed by water.

Bororos, name of a people of S. America, who were conquered by the Portuguese about the middle of the seventeenth century. They inhabit the states of Matto Grosso and Goyaz in Brazil, and are, according to some authorities, the parent stock of the Patagians. Their religious beliefs are of a primitive nature,

and their state of civilisation is not very advanced. They compare a man's soul to a bird, which flies away temporarily during sleep, returning on awakening.

Borotra, Jean (b. 1898), Fr. lawn tennis champion. First came into prominence in 1921. In 1924 he won the Fr. National Championships. He won the Men's Singles Championship at Wimbledon in 1924 by narrowly defeating Lacoste, and again in 1926. In America in 1925 he won the Covered Courts Championship, a success repeated in 1927 and 1929. In 1932, by beating Ellsworth Vines (U.S.A.), he won the Davis Cup for France. As secretary-general of physical development in 1940, he held office under the Vichy gov. of France during the Ger. occupation. Won Covered Courts Championship when fifty by defeating G. Paish, 1948.

Borough. The word B. is derived from O.E. *burg*, meaning a walled or fortified place. Such places comprised the fortress-girdled metropolis of each component kingdom of the heptarchy in Britain, walled seaports, border fortresses, and fortified *tuns*, or townships, on the royal demesne. The genesis of the *burg* is not to be sought in any Rom. source, and all the evidence at hand goes to show that the development of Eng. Bs. is exclusively related to the peculiar conditions of our national life. It is true that the Rom. *coloniæ* and *municipia* reveal in some sort the idea of self-gov., but the powerful central organisation of the Imperial gov. of anc. Rome and its military spirit were inconsistent with any true conception of local gov. In Britain, when the great fiefs or feudal baronies became hereditary, any local power that might have existed became absorbed in the privileges of the great barons. Thereafter burghal life in England is a slow growth originating in charters of incorporation or grants of liberties, comprising privileges rooted in custom, bought of the overlord at a heavy price in money and developed through the powerful organisations of merchant and craft guilds. Finally, the term B. becomes almost synonymous with the statutory creation of the 'municipal B.' denoting a place to which certain wide powers of self-gov. are accorded and exercised through the characteristic hierarchy of mayor, aldermen, and burgesses. The *township*, the smallest unit in the political system, consisting merely of a group of allodial landowners and held together by a community of interests, undoubtedly contained the germ of many of our Bs. Others grew out of a collection of such townships, and most of the remainder had their beginnings in the neighbourhood of some castle or under the walls of the monasteries. The chief magistrate of the *burg* was the *town-reeve*, or, in ports, the *port-reeve*. The men of the *burg* met together both for the purposes of commerce and defence, and by a system of mutual pledges (called *frankpledge*) answered for the good behaviour of every man in the *burg*, the paramount ownership of the great feudal lords being

preserved by their power to appoint the reeve and the exaction of an arbitrary tallage. The king's supreme ownership was secured through the jurisdiction of the hundred, from which the *burgs* soon obtained exemption, and the shire-gemot, to which they remained more or less subject until the evolution of that body into the co. council and co. court of to-day. Even before the Conquest a few big tns. had acquired the privilege of compounding for the arbitrary taxes or tallages of the king's sheriff by paying a fixed rent.

After the Conquest, Bs. or tns. became divided into those which were included in the royal demesne and those which were held by barons, and soon rose into greater importance through the grant by the king or overlord (as the case might be) of charters of incorporation and privileges. These privileges generally comprised a right of independent jurisdiction, self-assessment, the right to have a *hause*, or merchant guild, the free election of reeves, *infangentheof*, or local jurisdiction, over thieves, exemption from tolls, and the commutation of the profits of fairs and markets and the arbitrary assessments by the sheriff of individual burgesses (*q.v.*) for a perpetual fixed rent from the whole B., called the *firma burgi*. Those contributing towards the *firma burgi* were said to hold their tenements by burgage tenure. By the time of Henry III. most of the large tns. had obtained a distinct recognition by the king of their privileges and immunities. Charters were granted to the 'fully qualified members of the township,' and from having no powers of self-gov., Bs. soon became especially adapted through the organisation of the guild system, to the functions of municipal gov. Separate jurisdictions, and the obligations of feudal tenures which bound so many of the burgesses to some paramount tenant-in-capite, or great baron, disappear after incorporation, and the substitution of the *mayor* for the *reeve* heralds the advent of an independent local community. The municipal gov. of Bs. from and after the grants of incorporation by the Plantagenets was developed partly by the possession of corporate property, but arose chiefly from the spirit of corporate unity and mutual responsibility that permeated the *guilds*. When Bs. become recognised by the Crown, their by-laws (*burg-laws*) acquire a binding force. Later, in the reign of Edward III., the powers of the merchant guilds are absorbed by the *craft guilds*, or guilds of craftsmen engaged in a particular craft in a particular B. Ultimately the place of the craft guilds is taken by the merchant companies of the seventeenth century, and the powers of self-gov. revert to the close corporation of the B. composed of the mayor, aldermen, and councillors. From the middle of the thirteenth century the general tendency in the development of Bs. is to vest the governing powers in a mayor chosen by the whole body of burgesses, a group of aldermen, and a larger body of councillors. The

aldermen and councillors, who soon acquired the power to elect the mayor themselves, united themselves into a close corporation, and managed to get charters of incorporation granted to themselves to the exclusion of their fellow burgesses. This restrictive tendency increased, and after the close of the fifteenth century freemen were excluded by the close corporation from elections, and the corporation assumed the ownership of the B. property and even controlled the election of members of Parliament, a power which was found especially useful to the Crown. This state of things came to an end with the passing of the Municipal Corporations Act of 1835. That Act, which introduced the term 'municipal B.,' reformed the larger corporations and gave new powers of self-gov. to such places, whether parl. Bs. or not, as were deemed 'municipal Bs.' In connection with parl. representation, constitutional historians observe that the word B. becomes for a time associated with a place, whether incorporated or not, which usually returned a member to Parliament. Where the B. had no charter, that distinctive feature of Bs. was preserved by the assumption that every parl. B. must have had a charter at some former time, or was entitled to the privileges of incorporation by prescription (usage). The Reform Act, by disfranchising the rotten Bs., restored the meaning of B. to its previous signification. A B. now means a tn. or place subject to the Municipal Corporations Act, 1835. The Crown still retains the prerogative of incorporating Bs. by royal charter. A B. possesses a common seal and a council consisting of a mayor, aldermen, and councillors. The councillors are elected by the burgesses, and the mayor and aldermen by the council. The mayor is an *ex officio* magistrate for the B., and sometimes receives a salary. The mayor serves 1 year, the councillors 1 year, and the aldermen 3 years, one-third of the aldermen retiring annually. Bs. of over 50,000 inhab. can be turned into administrative cos., and are not then under the power of the co. council. The Local Government Act, 1888, converted sev. of these large Bs. into administrative cos. Some Bs. have a court of quarter sessions, presided over by a judicial officer called a recorder. A B. is but little controlled by the central gov., but the sanction of the Ministry of Health is required for loans secured on the B. rates, and the property of the B. may not be alienated without the consent of the Crown. A B. possesses wide powers of making by-laws for the good rule and gov. of the B. As to the qualification of a Burgess, see BURGESS. The word burgh as used now is appropriated to Scotch Bs. or burrows, as to which see BURGH. See also LOCAL GOVERNMENT.

Borough, The, see SOUTHWARK.
Borough (Burrows, Borrows), Stephen (1525-84), Eng. navigator; went on the expedition under Willoughby from the Thames to find a N. passage to Cathay and India, 1553, this being the first

voyage of the Eng. to Russia. B. was master of the *Eduard Bonaventure*, with Chancellor as chief pilot. Separated by storms from the other 2 vessels, he sailed on into the White Sea, being first to find and name North Cape. In a second expedition in the *Serchthrift*, 1556, he discovered Kara Straits between Novaya Zemlya and Vaygach Is. Probably about 1558 he went to Spain, and was the first to propose a translation of Cortés's work, known in Eng. as Eden's *Arte de Navigation*, 1561. B. went on another expedition to Russia in 1560, 'the seventh voyage of the Merchant adventurers to Moscow' (Hakluyt). In 1563 he was chief pilot and one of the four masters of the queen's ships in the Medway. Some of his records of his voyages appeared in Hakluyt.

Borough, William (1536-99), Eng. navigator and author, brother of Stephen B. (q.v.). He was an ordinary seaman on the *Eduard Bonaventure* on the first voyage to Russia, 1553. Afterwards he made many voyages to St. Nicholas. Later he transferred his services from the merchant adventurers to the Crown, but the actual dates are uncertain. In 1570 B. fought against pirates in the gulf of Finland. Commanding the *Lion*, he accompanied Drake in the Cadiz expedition, 1587; but got into trouble for questioning the wisdom of the attack on Lagos. He commanded the *Bonavolia* in the Armada fight, 1588. B. is author of *Instructions for Discovery of Cathay Eastwards for Pet and Jackman*, 1580; and of *A Discourse of the Variation of the Compass*, 1581. Some of his charts are preserved at the Brit. Museum and at Hatfield.

Boroughbridge, par. and mkt. tn. in the W. Riding of Yorkshire, Ripon div. It is on the Ure, 6 m. S.E. by E. of Ripon by rail. Pop. 800.

Borough English, custom, formerly existing in many cities and anct. bors. of England, by which lands and tenements held in anct. burghage descend to the youngest son instead of to the eldest, wherever such custom obtains.

Borovich, tn. of R.S.F.S.R., on the R. Msta, 98 m. E. of Novgorod, with brown-coal mines. Pop. 11,000.

Borovsk, tn. of R.S.F.S.R., 49 m. N.N.E. of Kaluga, and a few m. S. of Moscow. In its vicinity is a fifteenth-century convent, formerly one of the richest in the world. Pop. 9000.

Borrera, named after William Borrer, an eminent cryptogamist botanist. It is a genus of lichens, containing species which grow on trees or the ground, and are branched, bushy, or tufted little plants, one species farinaceous. Sev. are Brit.

Borreria, a genus of Cinchonads, of which one species, *Borreria ferruginea* and *B. podya*, both from Brazil, yield a bastard ipecacuanha.

Borromeo Islands, group of 4 is. on Lake Maggiore, off Baveno and Stresa, N. Italy. They are situated in the W. arm of the lake, and are named after the anct. family of Borromeo. They were

constructed by Count Borromeo (d. 1690), who built terraces and converted the is. into beautiful gardens. The 2 most celebrated is. are Isola Bella and Isola Madre. On the W. side of Isola Bella is a château of the Borromeo family. Isola Madre is the largest, and has long terraces and an old palace. Isola de' Pescatori contains a fishing vil. of about 200 fishermen.

Borromeo, Carlo (1538-84), It. saint and cardinal of the Rom. Catholic Church, son of Ghiberto B., count of Arona, and Margarita de' Medici, b. at the castle of Arona, on Lake Maggiore. He studied civil and canonical law at Pavia. He took his doctor's degree in 1559. When his uncle became pope, Carlo was made protonotary, created cardinal deacon, and raised to the archbishopric of Milan. He founded an academy of learned persons, and pub. their memoirs as the *Noctes Vaticanæ*. On the death of his brother he was advised by his friends to marry so that the family title might not be extinguished on his death. On the death of Pius IV., Carlo began the reformation of his diocese. Sev. religious orders opposed him in these reforms, the most vigorous being that of the Brothers of Humility. A plot to assassinate him was formed by this society, and he only escaped death by a miracle. During the plague at Milan in 1576 he helped the sick, buried the dead, distributed money, and avoided no danger for the sake of the suffering. He was canonised in 1610. Besides the *Noctes Vaticanæ* he pub. many homilies, discourses, and sermons.

Borromeo, Frederico (1564-1631), It. archbishop, nephew of Carlo B. (q.v.). He was made cardinal in 1587, and archbishop of Milan in 1595. His noble life is commemorated in Manzoni's *I Promessi Sposi* (1826). He was the founder of the Ambrosian library, for which he collected 9000 MSS.

Borromini, Francesco (1599-1667), It. architect, b. at Bissone; chief representative of the baroque style. Prin. works are the churches of S. Carlo alle Quattro Fontane, St. Agnese, and La Sapienza in Rome.

Borron, Robert de, Fr. writer of the twelfth century. He collaborated with Hélie de B., who was either his brother or a near relation, both of them being b. in England. Henry II. employed them to translate the stories of the Round Table into Fr. prose and Lat. Among the stories they translated were those of Merlin, Lancelot of the Lake, and the Holy Grail.

Borrow, George Henry (1803-81), Eng. philologist and author, b. at E. Dereham, Norfolk. In *Lavengro* he tells us that he was of Cornish descent on his father's side, while his mother belonged to a family of Fr. Protestants, who were obliged to leave their country for their faith's sake, and settled, with other Huguenots, in E. Anglia. He speaks of himself as being a very backward boy. In Norwich, where his parents came to live when he was 17, he was articled to a solicitor. Here his philological tastes were encouraged. He studied Welsh, and

learnt to read and appreciate the works of Dafydd ap Gwilym. On the death of his father, in 1824, which seems to have coincided with the expiration of his indentures, B. determined to give up his work in Norwich, and, with his knowledge of languages as his capital, proceeded to London, to seek fame and fortune as a writer. He became a hack writer in the firm of Sir Richard Phillips, who was undoubtedly the original of the vegetarian publisher in *Lavengro*. In 1825 appeared his first work, *Faustus: a translation from the German*, and in the next year a miscellany from the Danish. In 1826 also appeared his *Romantic Ballads*. The chains of London galled him, however, and in that year he threw them off



GEORGE HENRY BORROW

to wander through the country as tinker, gipsy, ostler, or whatever offered, walking through the Eng. countryside, consorting with those who, like himself, felt the call of the wild. Later, he extended his travels to the Continent, walking through parts of France, Austria, Italy, and Russia. He was in Paris during the 'three days'; later we find him at St. Petersburg, confining his studies in the main to living languages. From 1833 to 1835 he was in Russia, superintending the translation of the N.T. into Manchu, the court language of China. In 1835 he pub. his *Targum*, a collection of translations from 30 languages and dialects. Returning to England, he accepted the somewhat unlikely position of an agent to the Bible Society, and travelled through Spain, Portugal, and Morocco from 1835 to 1839, his adventures being admirably described in his own work. In 1840 he married Mrs. Clarke, a Norfolk lady, and settled down to a life of literary labour on her estate at Oulton Broad. To the estate he welcomed his old friends the gipsies, and it became for them a regular camping-ground. There he wrote the works which brought him fame, and there

he lived until his death in 1881, his wife having predeceased him in 1869.

In 1841 he had pub. *Zincali, or The Gypsies in Spain*, followed in 1843 by *The Bible in Spain*. The first, by its extraordinary knowledge of a mysterious race, and the second, by its wonderful pictures of the country, took the reading world by storm, and placed B. in the foremost rank of living writers. His popularity was too great to last. *Lavengro* (3 vols., 1851) and *The Romany Rye* (2 vols., 1857), its sequel, came far below the expectations aroused by the earlier work. It was not that the author was at fault, but that he did not write to suit his public. *Lavengro* is undoubtedly greater than the earlier books, even if *The Romany Rye* is weaker. *Lavengro* is a book of the open air—notice the progression in the sub-title 'Scholar, Gipsy, Priest'—it is the raciest of books; it had B.'s most striking passages. The reaction was intensified by the sequel, and B. never regained his popularity. His later books were certainly weaker than his earlier; *The Sleeping Bard* (1860), trans. from the Welsh, did not awaken much interest; *Wild Wales* (1862) is lacking in the romantic flights which characterise the earlier work; and *Romano Lavo-lil* (1874), a glossary of gipsy words and phrases, is curious, but not inspired. His last 2 books were *The Turkish Jester* (1884) and *The Death of Balder* (trans. from the Dan. of Ewald), (1889). See H. Jenkins, *Life of George Borrow*, 1912; E. A. Thomas, *George Borrow: the Man and his Books*, 1912; C. K. Shorter, *George Borrow and his Circle*, 1913; S. Dearden, *The Gypsy Gentleman*, 1939.

Borrowdale, a beautiful valley of W. Cumberland, ascending from the head of Derwentwater towards Honister Pass. It formerly possessed rich plumbago mines, which were exhausted in 1805.

Borrowing, see **LOANS**, **PUBLIC**.

Borrowing Days, or **Borrowed Days**, are the last 3 days of Mar., popularly supposed, according to Scottish legend, to have been borrowed from Apr. The deed is thus told in quaint verse:

'March borrowit from Averill
Three days and they were ill';

and in the equally quaint prose of the *Complaynt of Scotland*, it runs; 'The borial blastis of the thir borrowing daies of Marche hed chaisset the fragrant flurcise of evyrie fruit tree far abouth the feildis.' The rhyme however, is not peculiar to Scotland. See Kenneth Richmond's *Poetry and the People*, 1947, p. 199: 'that verse which, in one form or another, turns up in . . . every county:

March borrowed from Averil
Three days and they were ill.
The one was sleet and the other was snow
and the third was the worst that e'er did
blow.'

See also Apperson, *English Proverbs*, p. 401, where variants are given, including:

'March borrowes of April
Three days, and they are ill;
April borrowes of March again.
Three days of wind and rain.'

Borrows, Stephen, *see* BOROUGH, STEPHEN.

Borrowstownness, *see* BO'NESS.

Borsa, tn. of Rumania, in the dist. of Marmaros. It is noted for its mineral springs. Pop. 15,000.

Borsad, fort. tn. in the dist. of Kaira, Bombay, India, 23 m. N.E. of Cambay. Pop. 13,000.

Borsippa, the sister city of Babylon. It is often called in the anct. inscriptions Babylon II. or 'the city without equal.' According to Arab tradition, it was at B. that Nimrod sought to overthrow Abraham into a fiery furnace. The Fr. conducted excavations there in 1852, but later years have yielded better results and some inscribed tablets found at B. are now in the Brit. Museum. B. was the royal residence between 1200 and 800 B.C. It was sacred to the scribe-god Nabu or Nebo. The remains of the *ziggurat*, much vitrified owing to the action of fire, have frequently but erroneously been confused with the Tower of Babel. It was famous in the Gk. period for an astronomical school. The nearest railway station to it is at Illilah and the nearest modern village is Birs Nimrud.

Borsna, tn. in Ukraine in the region of Chernigov. It is about 9 m. from the Pliski station, and 15 from the junction of the Desna with the Seim.

Borsod, prov. of Hungary, stretching N. from the Theiss. The cap. is Miskolez.

Borstal System, system of detention and corrective training for persons of not less than 16 or more than 23 years of age, who are convicted on indictment of an offence for which they are liable to be sentenced to penal servitude or imprisonment. Towards the end of the nineteenth century it became recognised as the result of public inquiry that juvenile offenders too old for reformatory schools require special treatment to save them from growing into habitual criminals, and in 1902 the plan was inaugurated which is called the B. S., from Borstal Prison, Kent, where it was first tried. The first part of the B. S. is that a first offender, unless his crime is heinous, is assigned to the care of a probation officer, who can generally effect a cure by putting the boy to honest labour without the need of sending him to an institution. For a serious crime, the offender, if between 16 and 23, may be sentenced to 2 or 3 years' imprisonment at a B. institution. Three years is the preferable sentence, since it allows the authorities more time to effect a cure; moreover, the remission of the third year may be held out as a reward for good conduct. On a sentence of 2 years no remission is allowed. Special safeguards were made, however, by the Prevention of Crime Act, 1908, whereby a sufficient period of detention under B. rules was ensured for those thought to be in danger of relapsing into crime. When first sentenced, a juvenile offender is sent as soon as possible to the allocation centre at Wormwood Scrubs Boys' Prison. Here his case is studied with regard to his age, record, and general character and degree of development, and

a decision taken as to which institution is most likely to provide the correction and training most suitable to his particular case. Wormwood Scrubs Boys' Prison exists for those who have seriously misbehaved in a B. institution, and Feltham Boys' Prison for those who are unfit on medical grounds for training at a normal B. institution. In addition, there are now (1947) 7 B. institutions. Three of these are 'closed' institutions for youths with bad records, and are located at Borstal (Kent), Portland, and Nottingham. Three are 'open' camps for older youths with good records; the Hollesley Bay Colony in Suffolk, the N. Sea Camp in Lincolnshire, and Lowdham Grange, Nottinghamshire—this last being for those of poorer mental or physical ability. The seventh institution is at Usk, Monmouthshire, which is part closed, part open camp. At these institutions the boy undergoes an education which is calculated to stimulate what individual good there is in him. The corporate spirit is aroused by div. into houses under house-masters and by inter-house games. Increasing efforts are made to run the institution on the lines of a school rather than a prison. Craftsmanship, and industrial and physical training are also cared for. Every effort is made to study each individual case, and standardisation of method is not aimed at. At the 'open' camps farm-work plays an important part, either on the institution's own grounds or on neighbouring farms. There is also an institution for girls, run on similar lines, at Aylesbury. An important part of the B. S. is the Borstal Association for boys and the Aylesbury After-care Association for girls. It is a statutory duty of the Prison Commissioners to release on licence as soon as training at an institution may be reasonably held to have served its purpose. The associations mentioned above help and advise each boy and girl released on licence for a period of 2 years, and endeavour to find them employment. Should there be a relapse, a boy is sent to the Licence Revocation Centre at Chelmsford Prison and a girl to a wing of Holloway Prison set apart for the purpose as a B. institution. A special commission inquires into the causes of failure, and the period of detention before a new licence is issued varies and is subject to any new sentence which may have been passed. Some 500 boys each year are turned over to the B. authorities, and the success of the system is such that out of every 10 young men discharged 7 may be said to have settled down permanently to decent lives. Thus, during the years 1930-40, 59 per cent of males discharged were not reconvicted, 21·2 per cent were reconvicted once only, and 19·8 per cent were reconvicted twice or more. Figures for girls are similar although a little less favourable.

Bort-les-Orgues, tn. in the dept. of Corrèze, France. It is situated on the Dordogne, 39 m. S.W. of Clermont-Ferrand. Pop. 4000.

Borthwick Castle, a ruined tower 13½ m.

S.S.E. of Edinburgh. Founded in 1430. It is about 120 ft. high, and measures 74 ft. by 70 ft. In June 1567, Queen Mary and Bothwell passed 4 days here. The historian Robertson was b. at the manse close by.

Boru, see BRIAN.

Bory de Saint-Vincent, Jean Baptiste Georges (1780-1846), Fr. naturalist, b. at Agen. At the age of 19 he went to Mauritius and made a survey of sev. neighbouring is. In 1829 conducted scientific expeditions to Greece and some of the adjacent is. In 1839 he went to Algiers. His works contain the results of his botanical researches.

Boryslaw, tn. of Ukraine, 6 m. S.W. of Drohobycz; it has petroleum and ozokerite springs, which are the richest in Galicia. Pop. 7000.

Borythones, the anct. name for the Dnieper R. (q.v.).

Borzek, a vil. in Rumania, 95 m. E. by N. of Cluj. It is situated in the Carpathian valley, at a height of 2400 ft. above the sea, it is celebrated for its mineral waters, and is the most frequented watering-place in Transylvania.

Borzhom, Georgian watering-place, 93 m. to the W. of Tiflis. It has a fine climate, and 2 hot springs; its mineral waters are exported. Pop. 6500.



BORZOI

T. Fall

Borzoi, or Russian Wolfhound, dog of the greyhound type, which is found to endure cold and travel rapidly over snow. It is light and slender of build, has warm, silky hair and large hairy feet; its swiftness is remarkable, and it is therefore much used in wolf-hunting. The tsars of Russia for a long time kept special kennels of these hounds, and the first pair seen in England was given to King Edward by the tsar in 1870. Bs. hunt in couples, catching the wolf up very speedily, when one attacks it on each side, holding it until the huntsman rides up to dispatch it. When not engaged in hunting, the hound is good-tempered, obedient, and intelligent. In colour it is usually white, but black, tan, and yellow patches are frequently to be seen. In appearance it is graceful, with a long,

narrow skull, long and powerful neck and body, slender legs, deep chest, flat sides, and a profuse and silky coat. The average height of the male is 28 to 33 in., and of the female 26 to 30 in.

Bos, name of a genus of the Bovidae, or antelope, sheep, goat, and oxen family, which contains a single genus but many species. *B. primigenius*, the wild ox of Europe, now extinct, is said to be the progenitor of the Chillingham cattle. *B. frontalis* is the gaur, *B. gaurus* the gaur, *B. sondaicus* the banteng, *B. taurus* the wild cattle or aurochs, *B. bonasus* the European bison, *B. grunniens* the yak. See Ox.

Bos (fossil), the oxen family, occurs in a fossil state in the superficial deposits of Europe and America. *B. primigenius* is found in the Pleistocene in Essex and Wiltshire; *B. longifrons* in Ireland is a smaller species. *Urus priscus*, a variety of *B.* has been found in fresh-water deposits of Yorkshire, Essex, and Worcestershire.

Bos, Lambert (1670-1717), Dutch scholar and critic, b. at Workum in Friesland; educated at the univ. of Franeker, where he became Gk. prof. in 1704 and spent the rest of his life. His works include notes on Thomas Magister (fl. 1283-1332; wrote on anct. literary hist. and scholia on Æschylus and other Gk. writers), 1698; *Exercitationes Philologicae*, 1700; *Ellipses Græcæ*, 1702, trans. into Eng. by John Seager in 1830; *Vetus Testamentum ex Versione LXX. Interpretum*, 1709; *Antiquitates Græcæ*, 1714; *Animadversiones ad Scriptores quosdam Græcos*, 1715.

Bosa, tn. of Sardinia, Italy, 30 m. S. by W. of Sassari. The seat of a bishop; also noted for its coral fishery. Pop. 7000.

Bosanquet, Bernard (1848-1923), Eng. philosopher. He was a scholar of Balliol College, Oxford, and lecturer (1871-81) at Univ. College, Oxford. As a philosopher he was a follower of Hegel, whose *Æsthetic* he trans., and a disciple of T. H. Green. Works include (1885-99) *History of Æsthetic, Knowledge and Reality, Essentials of Logic, Psychology of Moral Self, and the Philosophical Theory of the State*.

Bosboom, Anna Louisa Geertruida Tousseint (1812-86), Dutch writer, b. at Alkmaar, was the daughter of Tousseint, a chemist, and the descendant of a Fr. Protestant family. During her early life she spent sev. years in historical research, of which she made good use later for her novels. In 1851 she married Jan. B., the painter. Her works, many of them stories of Dutch hist., are true representations of the manners and customs of the people. Among these works are: *Almagro*, 1837; *Engelschen te Rome (The English at Rome)*, 1839; *Het Huis Lauwerne (The House of Lauwerne)*, an episode of the Reformation, 1841 (trans. into sev. languages); the 3 stories of the Leicester family: *De Graaf van Leicester in Nederland*, 1846; *Vrouwen van het Leycestersche Tijdvak (Women of Leicester's Epoch)*, 1845; and *Gideon Florensz*, 1854; and *Majoor Frans*, 1874; this, though trans.

into Eng., did not command the success of her earlier books.

Boscán Almogaver, Juan (c. 1490-1542,) Sp. poet, b. at Barcelona, of an anct. noble family. He came to Granada to the court of Charles V. in 1516. He was afterward entrusted with the education of the duke of Alva. He passed some years in military service. His poems were pub. by his widow at Barcelona in 1543. They are divided into 4 books. The first contains light poems in the old Castilian metres. The second and third books consist of a number of poems in It. metre, sonnets, *canzoni*, and poems in blank verse. *Hero and Leander* is the longest of these. The fourth book contains his best effort, *The Allegory*. He pub. in 1534 a translation of Castiglione's *The Courtier*. His friendship with Garcilaso de la Vega (q.v.) bore fruit in popularising It. verse forms. He died at Perpignan.

Boscawen, vil. on the W. coast of Cornwall, Eng., 6 m. from Camelford. It is a popular holiday resort, has a sheltered harbour, and is surrounded by impressive scenery. Pop. 600.

Boscawen, Sir Edward (1711-61), Eng. admiral, third son of Hugh, first Viscount Falmouth. He became a lieutenant in 1732, served at Porto Bello, 1739-40; Cartagena, 1741; commanded a small squadron in Soundings, 1746; wounded off Finisterre, 1747; appointed commander-in-chief by land and sea in E. Indies in 1747, and later in the Mediterranean. Unsuccessfully attempted to reduce Pondicherry. He was nominally member of Parliament for Truro after 1741. He was Lord Commissioner of the Admiralty, 1751-61; vice-admiral, 1755. He commanded on N. Amer. station, in Channel, off Brest, and in the bay of Biscay at intervals between 1755-57; commander-in-chief of fleet at siege of Louisburg, 1758; privy councillor, 1759. His crowning feat was the destruction of the Fr. fleet in Lagos Bay on Aug. 18, 1759. When he died he was holding the post of general of marines. B. was nicknamed 'Old Dreadnought.'

Bosch, Jerome (c. 1462-1516), Dutch painter, so named from his bp. s'Hertogenbosch, Holland, his true name being van Aeken. From his choice of subjects he resembles Brueghel, whose art is said to have been largely founded on that of B. B. is, in fact, one of the most original artists of his age, and he also exercised a strong influence on Crahach. His subjects are chiefly satirical, fantastic, or grotesque. He was patronised by Philip II. of Spain, and sev. of his pictures are in the Prado, Madrid. Among his chief paintings are 'St. Jerome in the Desert,' 'St. Anthony,' 'The Last Judgment,' 'Adoration of the Magi,' 'The Fall of the Rebellious Angels.' See J. Combe, *Hieronymus Bosch*, 1948.

Bosch, Johannes van Den, Count (1780-1844), Dutch gen. and administrator, b. in Gelderland. He took up the military profession, going to Java in 1797, and rising to be governor-general of the Netherlands E. Indies in 1828. He endeavoured to improve the condition of

agriculture and land tenure by introducing the so-called 'culture' system. By this system the native cultivators were exempt from ground tax, but cultivated one-fifth of the land as the gov. directed, the latter taking the produce. From 1833 to 1839 he was colonial secretary of state, and was created count in 1842.

Bosch, Karl (1874-1940), Ger. chemist. He adapted the Haber process for synthesis of ammonia to commercial production, and became chairman of important dye works. He is credited with the discovery of a number of chemical substitutes which relieved shortage in Germany during the First World War. He was awarded the Nobel prize for chemistry, 1931.

Bosch Vaark, the common bush-pig (*Potamochoerus porcus Kotropamus*) of the Boers. It closely resembles the type found in Madagascar, the sole indigenous representative of the Artiodactyla in that is. The B. V. is found in E. and S. Africa.

Boscobel, par. in Shropshire, England, 22 m. E. by S. of Shrewsbury, 7 m. from Wolverhampton. Was the retreat of Charles II. after battle of Worcester, 1651.

Boscombe, sea-coast suburb of Bournemouth, Hampshire, England.

Bosco Reale, com. in Italy, 12 m. E.S.E. of Naples at the S. base of Mt. Vesuvius. Adjoining it is the com. of Bosco Trecase. Pop. of B. R. 9000.

Boscovich, Roger Joseph (1701 or 1711-1787), It. mathematician and astronomer, b. at Ragusa. He entered the order of Jesuits. He was appointed teacher of mathematics and philosophy in the Collegium Romanum at Rome. His reputation was previously made by the solution of the problem to find the sun's equator and fix the time of its rotation by observing the spots. He was sent to London in 1760 to defend the interests of Ragusa. In 1764 he was appointed to a professorship at Pavia, and subsequently at Milan. After the suppression of his order in 1773 he went to Paris, was given a pension by the king, and appointed director of optics to the navy. Afterwards returned to Milan where he gradually became insane. He gave much research to optics, especially to the theory of achromatic spectacles. He left more than 70 works on astronomy, physics, optics, etc., the prin. being *De Maculis solaribus* (see reference *supra* to sun-spots), 1736, in which is to be found the earliest geometrical solution of the problem of the equator of a planet determined by three observations; *Philosophiæ naturalis theoria reducta ad unicam legem*, 1758, in which he gives ingenious ideas on the system of the universe, tries to explain on one principle all the phenomena of nature and to reconcile the systems of Newton and Leibnitz; *Opera pertinentia ad opticam et astronomiam*, etc., 1785; *Elementa universæ matheseos*; *Treatise on dioptric telescopes*, 1755; *De solis ac lunæ defectibus*, 1760, an excellent Lat. poem on eclipses.

Boscovio, tn. of Czechoslovakia, 21 m.

N. by E. of Brno. Has coal mines and glass and chemical works. Pop. 5000.

Bose, Sir Jagadis Chandra (1853-1937). Indian naturalist, b. in India; educated in Calcutta and at Christ's College, Cambridge. He was appointed prof. of physical science at Presidency College, Calcutta in 1885, became emeritus prof. in 1915, and then founded and directed the Bose Research Institute in Calcutta. He became one of the greatest authorities on plant life. In the course of his investigations he invented many delicate recording instruments, one of the most notable of which is the crescograph. In nature the movement of plant tissues may be so minute as to defy the human eye. With the crescograph this movement can be magnified 10,000,000 times and the reactions of plants may thus be studied when manures, poisons, or other stimuli are applied. Among his numerous books are *Plant Response, Irritability of Plants, Life Movements in Plants*, and *The Nervous Mechanism of Plants*.

Bose, Subhas Chandra (1897-1942), Indian politician. He was an ardent nationalist, and a supporter of Gandhi. In 1920 he joined the Swaraj party, and from 1929 to 1931 was president of the All-India Trades Union Congress. In 1939 he became president of the Indian National Congress. Pub. *The Indian Struggle*. 1935.

Boshof, tn. of the Orange Free State, situated 40 m. N.E. by E. of Kimberley, and is the cap. of B. div. In Apr. 1900 Lord Methuen defeated the Boers here.

Bosio, François Joseph, Baron (1769-1845), lt.-fr. sculptor, b. at Monaco. Brought up and constantly lived in France. He was a favourite with Napoleon I. He became famous on account of the bas-reliefs he executed for the column in the Place Vendôme, Louis XVIII. and the succeeding kings of France employed him in many public works. He was created baron by Charles X., and admitted into the Institution in 1840.

Bosjesmans, see BUSHMEN.

Bosna, River, trib. of the R. Save, Yugoslavia, on its S. side about 160 m. long. It crosses the E. part of the prov. of Bosnia, taking a northerly course.

Bosna-Serai, Turkish name of Sarajevo (q.v.).

Bosnia and Herzegovina, provs. of Yugoslavia. The total area is 19,768 sq. m., and the greater part is included in the basin of the Danube. It is almost entirely mountainous, the Dinaric Alps being the chief range of mts. The chief rivs. are the Save in B. and the Narenta in H. In B. the forests on the slopes of the Dinaric Alps give a good supply of timber, and the pasturage here is also very good. Wheat, barley, and maize are also raised in sufficient quantities for home requirements, while tobacco and the vine are cultivated in the southernmost parts. Fruit is also grown to a great extent, and the chief fruit export is prunes. There is a considerable trade between Turkey and these states. Under the former Austrian administration rail-

ways were built in conjunction with the railways of Hungary, and the postal and telegraphic systems were developed. The pop. now reaches nearly 2 millions. The Austrians had done little to solve agrarian difficulties in B., but many of the peasants now possess their lands by hereditary rights, while a system of compensation was arranged for the former owners. In B. there are also some iron works and coal mines. Education is compulsory in B. and H., in common with the rest of Yugoslavia.

History.—The early hist. of these two provs. is the hist. of the prov. of Illyria. Gradually, however, after the Slavonic immigrations, external pressure, especially from Hungary, caused them to unite under one ruler. But the hist. of the race up to well into the mediæval period can be regarded as the hist. of a race dependent upon the Byzantine Empire or upon Hungary. Finally, in the thirteenth century, it fell altogether under the sway of Hungary, and became to all intents and purposes Hungarian ter. In the fourteenth century it became an independent kingdom, but was finally captured in the fifteenth century by the Turks. From the fifteenth to the nineteenth century the hist. of the Bosnians is the hist. of a conquered race. The Moslems in the country quickly seized all the power, and the Christian pop. was left very much at their mercy. In 1875 a Christian rising took place, and the Christians were joined in the following year by the Serbs and Montenegrins, and finally in 1877, Russia declared war on Turkey. By the treaty of Berlin of 1878, the two provs. were handed over to the military occupation of Austria, and the occupation was only carried out with the utmost difficulty. But under the Austrian administrator Kállay great improvement was made in the position of the people of B. The provs. when he d. in 1903 were certainly in a more prosperous state than they had been since their first occupation by the Turks 400 years previously. The Young Turk movement in 1908 warned Austria that reform in Turkey might lead to such a strengthening of her power that she would be able to demand that the provs. should be evacuated. In this way the reforms and the progress made under Austrian administration would accrue only to the benefit of the Turks. Hence, taking advantage of the feeble state of Russia, and the pending declaration of the independence of Bulgaria, Austria declared the annexation of B. and H. on Oct. 8, 1908. One result of the Austrian annexation was to provoke a difference between the Croats and the Serbs. The former supported Austria on religious grounds, while the Serbs believed that on the decline of Turkish power B. should have belonged to them for historic and ethnic reasons. On June 28, 1914, the Hapsburg heir was assassinated in Sarajevo by two youthful Bosnian subjects of Austria (see SARAJEVO). The First World War followed, in which B. suffered, being the scene of hostilities between Austria and Serbia. With the collapse of the

Austrian empire, the dream of a Serbo-Croat union was fulfilled, and by the constitution of June 1921, the fortunes of B. were merged in those of the new kingdom of the Serbs, Croats, and Slovenes. See also YUGOSLAVIA. See Sir A. J. Evans, *Through Bosnia and Herzegovina on Foot*, 1876; W. R. Chadburn, *My Balkan Tour*, 1911; R. W. Seton Watson, *The Role of Bosnia in International Politics*, 1931; B. Schmitt, *The Annexation of Bosnia*, 1937.

Bosphorus, or Bosporus; (1) Name given by ancients to the strait which leads from the Black Sea to the sea of Azov. Called also strait of Yenikale or Kerch. Hist. of the kingdom is involved in obscurity. It was named Cimmerian from the Cimmerii who dwelt on its borders, c. 750 B.C. (2) The word is derived from the Gk. denoting Ox-ford. The legend is that Io, daughter of Inachus, crossed the Thracian B. in the form of a cow. This strait unites the Black Sea with the sea of Marmora, and forms part of the boundary between Europe and Asia. The channel is 18 m. long, and has a depth varying from 20 to 66 fathoms. Its minimum width is 2½ m. It is rarely frozen over. The inlet, on either side of which lies Constantinople, is called the Golden Horn. The shores, which are elevated, are composed of various volcanic rocks, such as dolerite and granite, but along the remaining course the formations are Devonian. The scenery on both sides is varied and beautiful, being dotted with cypresses, laurels, and plane-trees and covered with palaces, vills., and picturesque gardens. On the European side are many fine buildings of the wealthier citizens of Constantinople. Before 1914, the B. was under Turkish control, and by a treaty of 1841, ratified by the treaty of Berlin in 1878 and other times, no ship of war other than Turkish might pass through the strait without the consent of the Turkish Gov. (the Porte). It is an interesting historical fact that Darius Hystaspes threw a bridge over this strait when about to invade Greece in 493 B.C.

The value of the capture of the B. as the key to operations against Turkey in general and Constantinople in particular was, of course, fully realised by the Entente in the First World War, but the initial obstacle was to overcome the Dardanelles. After the failure of the Allies to force the straits (see under DARDANELLES) and their evacuation of the peninsula (see GALLIPOLI, CAMPAIGN IN) the Gers. erected batteries for coast defence on the B. On the collapse of Turkey, however, the B. was occupied by allied vessels. The demilitarisation of the B. was provided for by the treaty of Lausanne and the conventions attached to it.

Bosquet, Pierre François Joseph (1810-1861), Fr. marshal, b. at Mont-de-Marsan in Landes. He entered the army in 1833, and went to Algeria a year later. Became a captain in 1839, lieutenant-colonel in 1845, and colonel of a Fr. line regiment in 1847. He returned to France in 1853.

In the Crimean war he contributed greatly to the victories of Alma and Inkermann. He was wounded at the siege of Malakof, where he took a leading part in the assault. He became a marshal of France and a senator in 1856.

Bosruck, Alpine tunnel on the Pyhrn railway, connecting Klaus Steyerling with Selzthal. It belongs to Austria; is situated at an elevation of 2405 ft. above the sea. The tunnel which is 3 m. in length, took 3 years to build, being started in 1902 and finished in 1905.

Boss (O.E. *boce*, a swelling; O.H.Ger. *bozo*, tuft or branch), ornament in architecture originally placed to hide the joinings of ribs on ceilings. This ornament was afterwards used as a decoration on mouldings and then became the chief feature of the ceiling. Strictly speaking, the B. should have a convex section. It was first hemispherical in shape, carved with foliage; after that the shape altered somewhat, and it was not necessarily round, figures and animals being introduced with or without the foliage. Eventually the general plan of the B. was square.

Bossi, Marco Enrico (1861-1925), It. organist and musical composer b. at Salo, Lake Garda. He studied at Bologna and later in Milan and, after going abroad, resolved to effect reforms in organ study in Italy. In 1881 his 1-act opera *Paquita* won the diploma of honour at the Bonetti competition. He held various directorial posts, including, from 1916 to 1922 that of the Royal Liceo di Santa Cecilia, Rome. Chief works: *Cantico dei cantici* (biblical cantata); *Il Paradiso perduto* (symphonic poem); operas: *Paquita* (1881); *Il reggente* (The Scer), 1890; *L'angelo della notte* (The Angel of the Night), and numerous minor compositions.

Bossiney, Trevena or **Trevanna**, a vil. of less than 100 inhab., included in the par. or postal dist. of Tintagel (pop. about 1300), Cornwall, England. Trevanna is the old name of the former vil. of Tintagel. The manor of Tintagel par. of B. is mentioned in Domesday; later it is referred to as 'the Manor of Tintagel.' The bor. charter of 1685 was granted to Tintagel, Trevanna, and B., but there have been no mayor or burgesses of Tintagel. As a parl. bor., however, it seems to have been generally known as B. It sent 2 members to Parliament before the Reform Act, 1832, transferred its representation to the co.

Bossu, Reno Le, see LE BOSSU.

Bossuet, Jacques Bénigne (1627-1704), Fr. orator and prelate, was b. at Dijon, France, on Sept. 27. Although of bourgeois rank, his family took an honourable part in the public and official life of Burgundy. He was destined from infancy for the Church. On his father's appointment to the presidency of the parlement at Metz, Jacques was left to the care of his uncle, whose delight it was to foster his nephew's gifts. At the Jesuits' college where he was educated, he outclassed all other scholars in Gk. and Lat. After reading the prophecies of Isaiah he was so struck by the beauty of their poetry

that he became virtually 'a man of one book.' The Jesuits endeavoured to enlist him in their order, but his family was against the proposal and he went to Paris in 1642. He entered the college of Navarre, where he achieved distinction. At the age of 24 he was appointed archdeacon of Metz, and became a priest in 1652. He spent 6 years in pastoral activity and in study of the Scriptures. He wrote at this time a book entitled *Réfutation du catéchisme de Paul Ferry*. He became renowned as a preacher, and was in perpetual request in the city. When he appeared crowds flocked to listen. The queen, Condé, Turenne, and Mme de Sévigné listened to him frequently, and Louis XIV. on hearing him for the first time sent a message of congratulation to the young man's father. His discourses have been divided into 3 parts, according to the place where they were uttered: (1) Those of Metz, showing a considerable amount of crudeness; (2) those of Paris, distinguished by strength and splendour; and (3) those of Meaux, in which faultless grace of composition is the chief characteristic. In 1669 B. was appointed to the diocese of Condom, and later became preceptor to the dauphin. He resigned the former post and plunged with vigour into his new duties, recognising that on the culture of the Dauphin might depend the future welfare of the Fr. people. During this period he wrote *L'Histoire abrégée de la France, La Politique sacrée*, and the celebrated *Discours sur l'histoire universelle*. In 1671 he was elected a member of the Fr. Academy. About this time he pub. the much criticised and widely trans. *Exposition de la doctrine de l'église catholique*. This book created much discussion, and twice received the imprimatur of the pope. In 1681 he was appointed to the bishopric of Meaux. Soon after he attended the general assembly of the Fr. clergy, convoked by royal edict, and he preached a great opening sermon on the unity of the Church. In 1688 appeared *L'Histoire des variations des églises protestantes*, a review in 15 books of confessions of faith emitted by Protestant churches during the Reformation period. He died in Paris in 1704. He was of unrivalled eloquence and great learning, a defender of the faith, and champion of anct. rights and liberties of the Gallican Church. His complete works were ed. by the Abbé Lebar, 1862-64. For a full bibliography see *Bibliothèque des bibliographies critiques*, by C. Urban, pub. by the Société des Études historiques, 1900. See also G. Lanson, *Bossuet*, 1901; E. K. Sanders, *Jacques Bénigne Bossuet: a Study* (Ecclesiastical Biographies), 1921.

Bossut, Charles (1730-1814), Fr. mathematician, b. at Tarturas, near Lyons, on Aug. 11. Studied under Clairaut and D'Alembert. From 1752 to 1789 prof. at Mézières. After the Revolution he was prof. at the Polytechnic schools in Paris. Wrote *Essai sur l'histoire générale des mathématiques*.

Bostan, El, 'the Garden' (anct. Comana),

tn. of Turkey, 40 m. N.W. of Marash, on the N. side of Mt. Taurus. Pop. 8000.

Bostanji, military force estab. by Mohammed II. in Turkey. They numbered about 5000, exclusive of local detachments, and were employed in guarding the forest dists.

Boston, municipal and parl. bor. and seaport tn. of Lincolnshire, England, situated on the R. Witham, 30 m. S.E. of Lincoln by rail. It lies in a flat agric. dist. Its anct. name was St. Botolph's Tn., from St. Botolph, who founded a monastery here in 654, which was afterwards destroyed by the Danes in 870. The church of St. Botolph is a Gothic structure with a tower (B. Stump) 200 ft. high. The docks, which have proved very profitable, belong to the corporation. B. is the headquarters of the deep-sea fishery. As a port B. was of anct. importance, but in the eighteenth century the riv. silted up, and thus it was only navigable for light vessels. In 1882 a dock about 7 ac. in extent was constructed. The bed of the riv. was also considerably deepened. During the fourteenth and fifteenth centuries the Hanseatic and Flemish merchants were largely responsible for its prosperity. There is a market for cattle and sheep. Foxe, the martyrologist (1517-87), was a native. Pop. 7000.

Boston, cap. of Massachusetts, in Suffolk co., U.S.A., situated on an inlet of Massachusetts Bay called B. Harbour, 234 m. N.E. of New York by rail. B. has the longest railway station in the U.S.A., opened in 1898. A whole series of lines of railway converge at this city. At the outskirts of the city is the junction railroad connecting most of these lines with one another. An extensive system of railways, opened in 1901, and a subway relieve the traffic of the streets. This subway for electric trams is about 9 m. long. Originally 3 m. in length, it was built by the city at a cost of about 7,500,000 dols. (£1,500,000), but was leased and operated by a private company on such terms as to repay its cost in 40 years. Additions were made to it, 1911-18. The chief imports are wool and woollen goods, sugar, leather and leather goods, cotton and cotton manufs. The chief articles of export are wool, iron and steel manufs., cotton and leather manufs., animals, and bread stuffs. B. is the prin. wool market of the U.S. and second only to New York in value of its foreign trade, but its coastwise trade is more important than its transatlantic. Its harbour is 16 m. long by 9 m. broad, and contains a number of fort. is. The climate is generally healthy though exposed to E. winds, and lung complaints are very prevalent. B. is one of the finest cities of the U.S., and contains some of the choicest examples of architecture. Trinity Church, erected at a cost of 800,000 dols., and the Rom. Catholic church are two of the chief glories of the city. The former was begun in 1877, and, built in the Romanesque style of S. France, is the masterpiece of H. H. Richardson. There are windows by William Morris,

Burne-Jones, and others in it. The mother church of the Christian Scientists (whose headquarters are at B.) cost \$400,000 and was opened in 1906. The library (1885-1905) cost 2,486,000 dols., is a dignified building of pinkish-grey stone, and is built in the style of the It. Renaissance. The old museum is a red-brick edifice in modern Gothic style. Historically famous buildings are the Faneuil Hall, 1743, known as the 'cradle of Liberty' since the revolutionaries met here; Old S. Church, 1730; Old N. Church, 1723; Old State House, 1748; New State House, 1795; and King's Chapel, 1754. Among other public buildings are Tremont Temple, headquarters of the New England Baptists, free public library, post office and sub-treasury buildings, the U.S. gov. buildings, the co. court house, and 3 large hospitals. The city has an excellent water supply and an elaborate sewage system. Among its many educational institutions may be mentioned the Massachusetts Institute of Technology, a univ. (Methodist Episcopal), a Rom. Catholic college, the Massachusetts College of Pharmacy, a medical school, dental and medical schools of Harvard Univ., the Massachusetts Normal Art School and 2 conservatories of music, one, the New England Conservatory of Music, being the largest in the U.S.A. As a musical centre it rivals New York, and was the undisputed literary centre of America until the latter part of the nineteenth century. When B. was first settled it was called Shawmut or Trimountaine. It bore a conspicuous part in the early trouble with England, and of all Amer. tns. was the most energetic in opposition to Grenville's Stamp Act. With the repeal of that Act came the Declaratory Act, in which Parliament asserted its right to tax the colonies; various duties were imposed, and this led to a boycott by the B. merchants, who were, in fact, urged on to revolutionary courses by one Samuel Adams. The result was that two regiments of regulars were sent to the tn., the attempt to quarter them there leading to what is known as the B. massacre (1770). After the destruction of the Brit.-taxed tea in the harbour (1773), the port was closed and the tn. was occupied by a Brit. force, which was compelled to evacuate in Mar. 1776. During years 1830-60 it was the headquarters of the movement for the suppression of slavery. The city has suffered much by conflagration, especially in 1872, when 80 ac. of buildings were destroyed by fire. Bp. of Franklin, Copley the painter, Poe, Emerson, and other eminent men. Pop. 770,800.

Bibliography.—*Records relating to the Early History of Boston* (Boston), 1905; A. French, *The Siege of Boston* (London), 1911; H. W. Foote, *Annals of King's Chapel*, 2 vols. (Boston), 1900; M. C. Crawford, *Romantic Days in Old Boston* (Boston), 1910; L. Whiting, *Boston Days* (Boston), 1911; S. Jenkins, *The Old Boston Post* (Boston), 1913; E. M. Bacon, *Rambles around Old Boston*, 1914; L. M. Beebe, *Boston and the Boston Legend*, 1935.

Boston, card game invented in the last quarter of the eighteenth century, and said to have originated in Boston, Massachusetts, during the Brit. siege, among the officers of the Fr. fleet, which lay off Marblehead. The 2 small is. in the Marblehead Harbour, called Great and Little Misery from the period of the Amer. Revolution, correspond to terms used in the game. At the middle of the nineteenth century B. was still popular in Europe, and to a less degree in America, since when it has declined in favour.

Boston Orators, school of orators of revolutionary times, and of the succeeding period, who sprang up in Boston, Massachusetts, about the beginning of the nineteenth century, and formed, perhaps, the earliest manifestation of what New England culture was to be in the future. The chief of these orators was Daniel Webster, advocate and parl. debater, whose devotion to the constitution of the U.S.A. made his utterances akin to the religious enthusiasm of Puritan times. His orations, though artificial from a modern standpoint, were sincere and modelled on the best style of parl. oratory of the eighteenth century, and therefore ultimately on the classical style of Cicero and Demosthenes. His most eminent contemporary was Edward Everett, and a later formal master of this style of oratory was Rufus Choate, whose forensic triumphs still linger in the public memory; and from the same school sprang the advocates of anti-slavery sentiment.

Boston Tea Party, so called from a large meeting of Amers. at B. on Dec. 16, 1773, to demonstrate against the attempt of Lord North's Cabinet to force the importation of tea on the colony of Massachusetts by 3 ships which had just arrived in the harbour and were moored at Griffin's wharf preparatory to unloading their cargoes. There was also a large protest meeting at the old South Church, and as this proved a failure, on the same night about 50 men who were disguised as Mohawks boarded the Brit. tea ships in the harbour, and cast overboard 400 chests of tea.

Boston, Thomas (1677-1732), Scottish divine, b. at Duns, Berwickshire; was successively a schoolmaster at Glencairn and minister in Berwickshire and at Ettrick, Stirlingshire. His best-known work, *The Fourfold State*, was one of the religious classics of Scotland. He also played a leading part in the courts of the Church in what became known as the Marrow controversy, respecting the merits of an Eng. work, *The Marrow of Modern Divinity*, which he defended against the attacks of the Moderate party in the Church. B.'s autobiography is an interesting record of the Scottish life of his period, full of sincerity and conscious and unconscious humour.

Bostonite, igneous rock of the hypabyssal or dyke class. It contains a high proportion of soda, its other essential constituents being alkali-felspar, quartz, and biotite. Occurs in Arran and Skye.

Boswell, Alexander (1775-1822), Scottish printer and song-writer, son of

James B. (q.v.), b. at Auchinleck. He was educated at Westminster and Oxford. He settled at Auchinleck, where he set up a private press and printed many rare books in early Eng. and Scottish literature. In 1817 he contributed 12 songs to Thomson's select collection of original Scottish airs. He was created a baronet in 1821 for a loyal composition entitled *Long live George the Fourth*. In 1822 he fought a duel with James Stuart of Duncarn, who challenged him as the author of certain truculent pasquinades reflecting on his honour and courage. B. was mortally wounded and d. the next day. He was a devoted admirer of Burns, and by his own exertions raised £2000 for the monument on the banks of the Doon.



JAMES BOSWELL

Boswell, James (1740-95), Scottish author, biographer of Samuel Johnson, b. in Edinburgh, Oct. 29, eldest son of Alexander B., who became Lord Auchinleck. He was educated at Edinburgh high school and univ., studied law at Glasgow under Adam Smith and also at Edinburgh. He made the acquaintance of Johnson in London in 1763. Studied civil law at Utrecht in 1765, and travelled thence to Berlin and Geneva, meeting Voltaire and Rousseau. He made the acquaintance of Wilkes in Italy, and was introduced to Gen. Paoli in Corsica. He returned to England in 1766, became an advocate in the same year. He pub. an *Account of Corsica* in 1768, and *Essays in Favour of the Brave Corsicans* in 1769. He made frequent visits to Johnson in London between the years 1772 and 1784; toured with Johnson in the Hebrides, Aug. to Nov. 1773. In the same year

he was elected a member of the Literary Club. He then began to keep term at the Inner Temple in 1775, and succeeded to his father's estate 1782. He pub. a *Letter to the People of Scotland on the Present State of the Nation*, hoping to gain thereby political influence (1783). Many exquisite traits of Dr. Johnson's character are recorded in B.'s famous *Journal of a Tour to the Hebrides* (1785; 3rd ed. revised by Malone, 1786). He was called to the Eng. Bar in 1786; recorder of Carlisle, 1788-90; came to reside in London, 1789; and pub. the *Life of Johnson* in 1791. He became secretary of foreign correspondence to the Royal Academy in 1791. The study of B.'s personality and character has, until more recent years, been neglected, mainly because Macaulay set the prevailing fashion of regarding him as a servile, pedantic, and shallow sot, and trying to explain away his triumph as a biographer on the supposition of inspired idleness. G. Brkbeck Hill's monumental ed. of B.'s *Life of Johnson* was pub. in 1887 (6 vols.). In 1927 letters on which a new life of B. will doubtless be based were sold by Lord Talbot de Malahide, a descendant of B., *ex parte maternal*, to Col. R. Isham, an Amer. collector. This material, ed. by Geoffrey Scott and F. A. Pottle, was privately printed in 1928-34, under the title of *Private Papers of James Boswell from Malahide Castle*. Mention must be made of R. B. Adam's collection of *Boswelliana*, a collection which contains one of B.'s note-books for 1776-77, pub. in 1925 with concomitant passages from the life and an introduction and notes. See also F. A. Pottle (and others), *Index to the Private Papers*, 1937, and his *Literary Career of James Boswell, Esq.*, 1929; P. H. Fitzgerald, *Life of James Boswell*, 1891; C. B. Tinker, *The letters of James Boswell*, 1924; C. E. Vulliamy, *James Boswell*, 1932; and D. B. Wyndham Lewis, *The Hooded Hawk, or The Case of Mr. Boswell*, 1947.

Boswell, James (1778-1822), son of Johnson's biographer, a barrister by profession and a member of the Roxburghe Club, was awarded the Vinerian fellowship at Brasenose, Oxford. He completed his friend Malone's *Shakespeare* (2nd ed.), and also ed. the third variorum *Shakespeare*, 1821.

Boswellia, genus of balsamic plants belonging to the order Burseraceae, comprising 10 Indian and African species. They are said to yield oilbalm or frankincense used in incense in Catholic churches, and one species is supposed to be the *Libanus* of Theophrastus, the *thurea virga* of the Romans. *B. thurifera*, a large Indian timber-tree, and *B. glabra*, also Indian, yield a resin.

Bosworth, or **Market Bosworth**, mkt. tn. of Leicestershire, 12 m. W. from Leicester. Two m. to the S. is B. Field, the site of the last battle between the houses of York and Lancaster, Aug. 22, 1485, when Richard III. was beaten by the earl of Richmond, afterwards Henry VII., and slain. Dr. Johnson was an usher in the grammar school. Pop. of par. 900.

Bosworth, Joseph (1789-1876), Eng. philologist, b. in Derbyshire, educated at Repton grammar school and Aberdeen Univ. His *Elements of Anglo-Saxon* appeared in 1823. His prin. work, a *Dictionary of Anglo-Saxon Language*, was pub. in 1838. In 1858 he obtained the professorship of A.-S. at Oxford Univ.

Böszörmény, or Hajdu-Böszörmény, tn. with a magistracy in the prov. of Hajdu, Hungary. It is situated 13 m. N.N.E. of Debreczen. Pop. 21,000.

Botallack, name of a mine on the W. coast of Cornwall, 7 m. W. of Penzance. From 1721 it was worked for tin, and in 1841 for copper. The works are at the cliff's edge, and extend over 2000 ft. below the sea.

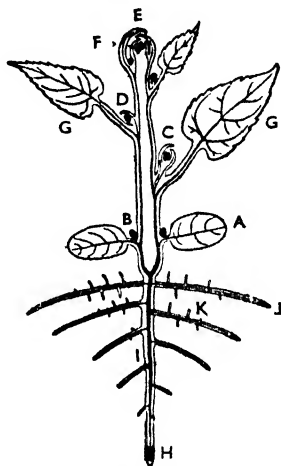
Botanic Garden, garden designed for the promotion of botanical science. It owes its origin to pharmacy. The earliest European school of medicine was at Salerno, and records exist there of the medical garden of Matthæus Sylvaticus (1309). In 1333 a similar garden was estab. by the republic of Venice. Soon many public and private bodies followed the example. The botanical garden, in the modern use of the phrase, dates from a private one erected at Padua between the years 1525 and 1533, from the public one at Pisa, estab. by Cosmo de' Medici in 1544, or from that of Padua in 1555. B. Gs. were then laid in most It. cities and at the univs. of Leyden, Leipzig, Breslau, and Heidelberg. A royal garden was estab. at Paris in 1597, its chief use being to supply the ladies of the court with bouquets, and it was not until 1616 that its scientific purposes were defined. This garden became famous as the Jardin des Plantes, and chairs of botany and pharmacology were founded in 1635. In the seventeenth century many gardens were laid, the chief including those at Oxford, Chelsea, and Edinburgh. In the eighteenth century, further stimulus was given to this movement by Linnaeus. Most European and Amer. univs. now possess botanical gardens. In America are also the famous gardens of Philadelphia and New York. Kew Gardens in London, estab. in 1759, are generally regarded as the largest and best equipped gardens in the world. These gardens have been of enormous practical use to the Brit. colonies; it is owing to researches there carried on, for instance, that rubber was found to be a suitable crop for the Malay peninsula, and that the cinchona tree, from which quinine is obtained, was introduced into India. The botanical gardens at Cambridge are also important, and there are fine gardens at Vienna, Edinburgh, Dublin, Glasgow, Rio de Janeiro, Melbourne, Trinidad, Georgetown (Brit. Guiana), Vancouver, Sydney, Singapore, Sibpur, near Calcutta, and Peradeniya in Ceylon. The B. G. at Buitenzorg (Java) is particularly well known for the publication of its *Annales*. Connected with many B. Gs. are museums, herbaria, laboratories for research and investigation, etc. The principle of arrangement of the plants is varied, some ranging them according to their

geographical distribution, and others according to their medical and economic interests, or in their natural families. The varied origin of the plants necessitates placing them in conditions similar to those from which they were taken.

Botany (Gk. *botanē*, plant) is the science which comprehends all that relates to the vegetable kingdom, and deals with plants in both the living and the fossil state. It treats of their morphology, or external form; of their anatomy, or internal structure; histology, or tissues; physiology, or their functions and organs; ecology, or relation to their environment; pathology, or diseases; phylogeny, or descent from other forms; paleobotany, or fossil forms; geographical distribution; taxonomy, or classification and economic uses; embryology, or development; genetics, or heredity; cytology, or the study of cells. In itself it constitutes a large div. of biology, or the science of life, and is thus associated with zoology, which deals with animal life. B. is an anc. branch of learning, dating from the time of Solomon, who 'spoke of trees, from the cedar of Lebanon to the hyssop on the wall' (1 Kings iv. 33). Herodotus and Aristotle were conversant with the science, while Theophrastus studied the morphology of plants. Another Gk., Dioscorides, seems to have been the first author of a book on materia medica, while Pliny wrote of grafting and budding, and recognised the sexuality of flowers. In the year 1532 Otto Brunfels, a Bernese physician, pub. the *Herbarum Vivæ Elicones*, in which he described about 240 species, about one-fifth of the whole number of those which had been discovered up to his day by the Gk., Rom., and Arabian herbalists. As a reformer of the science he was followed by Tragus, Fuchs, and Matthioli, and especially by Conrad Gesner, a native of Zürich, who was assisted by compilers in making a collection of known species from various books. The followers of Gesner were numerous, and among the most distinguished of them, between the years 1550 and 1660, were Turner, Dodoens, Lobel, Clusius, Cæsalpinus, and the Bauhins. The knowledge of so many species made classification of so many species made classification imperative. To Matthew Lobel, a Dutch physician, who resided in England in the time of Elizabeth, is due the credit of arranging plants so that their order should be an expression of their natural relations. His system was rude and imperfect, but it comprehended sev. combinations which are recognised at the present day, e.g. plants belonging to the Leguminosæ and Graminæ. Wm. Turner, known as the 'father of Eng. B.', succeeded Lobel, publishing a book on systematic arrangement in 1551, and in 1597 a barber-surgeon of Holborn, John Gerard, wrote his *Herbal*, which was the standard book of Eng. botanists in the seventeenth century. A methodical arrangement of plants was discovered by Cæsalpinus, a Rom. physician attached to the court of Pope Sixtus V., whose *De Plantis* appeared in 1583. Later on

other discoveries were made, e.g. spiral vessels were described by Henshaw in 1661, while Hook excited attention by his examination of cellular tissue, and Grew gave rise to anatomical B. The science of plant physiology may be said to have been founded by the Rev. Stephen Hales, vicar of Teddington (1677-1761). The true principles of classification were at length obtained by John Ray, who expounded these in his *Historia Plantarum*, the first vol. of which appeared in 1686. The science had now become so firmly estab. in England that a professorship of B. was created at Oxford, and the chair was filled by Dr. Robert Morison (1620-83). In France J. P. de Tournefort was elected prof. at the Jardin des Plantes, and in 1700 he described his system of classification in his *Institutiones*. This was subsequently displaced by Linnaeus, whose *Species Plantarum* was pub. in 1753, and who revolutionised the whole of this branch of B. He insisted on the importance of a good nomenclature, and examined particularly the sexual system of plants; he introduced the binomial system of nomenclature (the first scientific name being that of the *genus* and the second that of the *species*), which is still in use for animals as well as plants. Eleven years after the death of Linnaeus, A. L. de Jussieu, in 1789, produced, under the name of *Genera Plantarum*, an arrangement of plants according to their natural relations, using as stepping-stones Ray and Tournefort. A. T. Brongniart, the Fr. botanist, is responsible for an increase of knowledge in the fertilisation of plants, establishing the theory of Amici that pollen tubes exist in flowers. To the work of classification George Bentham and Sir William Jackson Hooker, prof. of B. in Glasgow, and director of Kew Gardens in 1841, contributed greatly in their important book *Genera Plantarum ad Exemplaria imprimis in Herbariis Kewensibus Servata Definita*, 1862-83. In the classification generally observed at the present time the Plant Kingdom is divided into 4 large groups, the Thallophyta, Bryophyta, Pteridophyta, and Spermatophyta, each of which is again divided. The Thallophyta includes the Algae, to which all seaweeds and many freshwater plants belong, and the Fungi, to which mushrooms, toadstools, and moulds belong; the Lichens consist of Algae and Fungi living in symbiosis, and are also known as Thallophytes. The Bryophyta, or Muscinæ, include liverworts and mosses, while the Pteridophyta, or Vascular Cryptogams, comprise ferns, selaginellas, *Equisetum*, and club mosses, including many extinct species such as those found fossilised in coal deposits. The Spermatophyta, Phanerogams, or Flowering Plants are the largest group, and are subdivided into Gymnosperms and Angiosperms. The gymnospermous flowering plants are trees or shrubs which have their ovules freely exposed, the carpel is not closed to form ovary, style, or stigma, the flowers are always unisexual and the plants usually monoecious; they include the Cycads, Conifers, and

Gnetaceæ. The angiospermous flowering plants are numerous, and comprise many shrubs and trees as well as herbaceous plants and grasses. Among them the Monocotyledons are plants which have only 1 seed leaf, and they are usually characterised by having parallel venation in their leaves, the flowers in parts of threes, e.g. the palms, grasses, lilies, and orchids; the Dicotyledons are plants which have 2 seed leaves, and are characterised by having reticulate venation in the leaves, and the flowers in parts of twos, fours, or fives, e.g. buttercups, roses, parsley, nettles, bluebells, and oak. In studying the morphology of plants it is



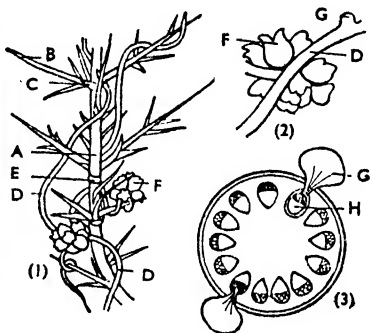
GENERAL STRUCTURE OF A DICOTYLEDONOUS PLANT

A, cotyledons; B, first axillary buds; C, D, later axillary buds; E, terminal bud; F, growing point of stem; G, foliage leaves; H, growing tip of root and its protective cap; I, main root (primary); J, lateral roots (secondary); K, root hairs.

usual to begin with the simplest form of vegetable life, and this may be seen in some algae. The lowest plant is a unicellular body composed of protoplasm, containing a single nucleus, and several chloroplasts which are coloured green by chlorophyll. In the next form the plant shows a distinction between a base and apex, one descending into the earth for fixation and to obtain nourishment, the other ascending to the light. Among the Bryophyta there is no such differentiation into root and shoot, but in the Pteridophyta both are present. In the Phanerogams, of course, a root and shoot are the essential parts of a plant, and specialisation of other members reaches a very high point. The shoot bears upon it many leaves and modifications of leaves, the most noticeable being the foliage

leaf, which consists of a *vagina*, or leaf base; *petiole*, or stalk; and *lamina*, or blade. In many Dicotyledons, but few Monocotyledons, the *vagina* has 2 little outgrowths called *stipules*, e.g. the rose. The embryonic leaves of a plant are known as *cotyledons*, the membranous leaves found on underground stems or serving as protection for buds are known as *scale leaves*, while the leaf structure in the axil of which a flower appears is called a *bract*. The flowers themselves are made up entirely of leaves, and a complete, perfect dicotyledon has present a calyx, corolla, androecium, and gynoecium all composed of leaves. In Monocotyledons the calyx and corolla (i.e. the sepals and petals) are not differentiated from one another, and the result is a *perianth*. The essential organs of the flower are the androecium, or stamens, and gynoecium, or pistil, because it is they which are responsible for the reproduction of their kind. The stamens are composed of a *filament* and an *anther*, in which is stored the pollen that fertilises the female organs. The pistil consists of an *ovary* containing ovules, a style, and a stigma. When in a single flower both androecium and gynoecium are present, it is said to be hermaphrodite or bisexual, e.g. buttercup; when the flower consists of only one of these organs, it is unisexual. If hermaphrodite, male, and female flowers are all found on 1 plant, e.g. ash, it is *polygamous*; if the unisexual flowers occur on the same plant, e.g. hazel, they are *monoecious*; and if on different plants, e.g. willow, they are *dioecious*. The internal anatomy or histology of plants is concerned with the cell, its origin, structure, contents, etc., the tissues and tissue systems to which it gives rise. The changes in these contents, the fusions of cells, the thickening of the cell wall, its growth in surface extent, and its chemical changes are a few of the subjects which must be studied in connection with histology. The physiology of plants deals with the processes they undergo for their nutrition and growth. Water is essential to all plants, and the living substance of a green plant is built up of carbon, oxygen, hydrogen, nitrogen, sulphur, and phosphorus, while such other chemical elements as calcium, potassium, magnesium, iron, sodium, silicon, and chlorine also enter into its composition. The carbon is obtained from the carbon dioxide of the atmosphere by the green parts of the plant in the presence of light by means of the process known as *photosynthesis*, or carbon assimilation. All the other elements are procured by *root absorption*, a method by which water containing salts in solution passes into the plant through the root. It is evident that a large amount of water is absorbed, and the surplus is given off from the aerial parts as vapour by the process of *transpiration*, which, as it is regulated by the vital activity of the plant, is by no means identical with mere evaporation. *Respiration*, in plants, unlike carbon assimilation, takes place over their whole surface, independent of light and chloro-

phyll; it is a breathing process as contrasted with one which feeds, and the two are opposed in that respiration absorbs oxygen and gives out carbon dioxide, while photosynthesis performs the reverse action. During photosynthesis energy, in the form of sunlight, is absorbed, whilst during respiration the same energy, transformed into heat, etc., is liberated and enables plants (as well as animals) to carry out their various vital activities. Growth is the result of all the various building-up and breaking-down processes which constitute metabolism. The simple cell which is the foundation of plant life receives nourishment by carbon assimilation and other nutritive processes, hence grows in extent. Many plants receive



DODDER, PARASITIC ON GORSE

(1) Parasite in flower; (2) Cluster of flowers enlarged; (3) Suckers (oblique section) penetrating vascular bundles.

A, main stem of gorse host; B, branch spine; C, leaf spine; D, stem of dodder, long internodes; E, tight coil of D; F, flowers of dodder; G, sucker; H, vascular bundle of gorse stem.

their food supply by means of *parasitism*, when, by means of planting their roots in other living organisms, they obtain the complex organic compounds necessary to their existence. Examples of complete parasitism are found in the broomrape, which has become so degenerate that its foliage leaves are reduced to mere colourless scales entirely devoid of chlorophyll, and the dodder, which lives on clover, heather, and other plants. The mistletoe is a partial parasite, obtaining its water and salts from the wood of its host-plant, such as the oak-tree or the apple, and carrying on its own process of photosynthesis in the usual manner. *Saprophytic* plants are those, such as the bird's-nest orchid and many fungi, which obtain their food from decaying organic substances. The interesting condition known as *symbiosis* exists when 2 plants receive mutual benefit from their association, e.g. when a species of bacterium is found upon the root of peas and other leguminous plants, the tiny bacterium deriving

carbohydrates from its partner and in return supplying it with nitrogen. Reproduction is effected sexually and asexually; in the former case 2 sexual cells, or *gametes*, usually a male and a female gamete, fuse together to produce a cell (fertilised egg) which eventually develops into a new plant; in the latter part of the parent plant, either a single reproductive cell, called a spore, or a specialised vegetative part gives rise directly to a new plant. In the lower divs. of the vegetable kingdom an *alternation of generations* is often to be observed, i.e. a spore produces a new plant which in its turn gives rise to gametes, and the plant resulting from the fusion of gametes again produces spores. In the higher plants an alternation of generations still occurs, but the spore-bearing generation has become predominant and a new process, *pollination*, has evolved in connection with life on land; the pollen, when transferred to the stigma, sends out a pollen tube which pierces both stigma and style, finally reaching an ovule and converting it into a seed with power of reproducing its kind. By the asexual methods many of the higher plants are reproduced in various ways, chiefly by means of highly specialised shoots, such as the runners of the strawberry, the stolon of the bramble, whose branches may take root at the point of contact with the earth, the offset of the house leek, and the sucker of such widely diverse plants as the herbaceous mint and the elm-tree. The tuber of the potato, rhizome of Solomon's seal, and bulb of the daffodil all participate in the vegetative reproduction of their kind. *Heredity* in plants was first studied to any great extent by Mendel, and his pioneer experiments in plant breeding and in the crossing of species have proved of immense agric. and horticult. value. The *dispersal of seeds* is effected in many ways to ensure the survival of plants; many are blown by the wind in different directions, as the cypselas of the dandelion and thistle, the samara of the ash and elm, the caryopsis of the various grasses, the dust-like seeds of the orchid, the jerked-out seeds of the poppy and the wallflower. The seeds of the water lily are able to float for a considerable distance, and the coco-nut will grow after long immersion in salt water. The fruit of the balsam has an explosive mechanism which ejects the seeds suddenly at a light touch. Many other seeds are sown when fruit has been eaten by birds and other animals and the seeds have passed through the alimentary canals; currants and gooseberries serve as examples. Occasionally a fruit has hooked spines, as in the burdock, which become attached to the fur of passing animals, and the seed thus travels some distance before it takes root in the ground. The geographical distribution of plants is the science which endeavours to discover the reasons for the presence or absence of particular plants in various parts of the globe. The first step in this science is, naturally, the arranging of the plants in

their different areas, and then the consideration of their chief characteristics, their modifications, methods of life, the effect of the soil and external conditions, their relation to plants in other areas, and kindred subjects. Many botanical expeditions are made annually in order to discover new flora and interesting fossil specimens. In 1929 Dr. T. F. Chipp visited the Sudan, and later gave his collection to the Herbarium at Kew. The Indo-China expedition of Mr. F. Kingdon Ward resulted in the discovery of many new herbaceous plants and trees of great magnitude; while Mr. J. M. Cowan of the Royal Botanic Gardens, Kew, and Mr. C. J. Darlington of the John Innes Horticult. Institute visited Iraq and Persia collecting living bulbs and succulents as well as many dried specimens. Other expeditions in which Kew took a particular interest were to Brit. Guiana, Somaliland, and S. Africa. The experiments conducted by Sir Jagadis Chunder Bose at the Bose Institute in Calcutta on photosynthesis, life movements in plants, and kindred subjects have aroused much scientific interest in recent years and have opened up a new branch of botanical research. Palaeobotany, or fossil B., is a study which has engaged the attention of scientists for little over a century, though occasional reference to fossil plants have been made by early writers. Leaf impressions were first recorded by J. D. Magn in 1664, and the first book pub. in Britain on such a subject was that of Edward Lhuyd, who in 1699 produced his *Lithophylacii Britannici Iconographia*. The chief work of A. F. Brongniart was his *Prodrome d'une histoire des végétaux fossiles*, which appeared between the years 1828 and 1847. More modern palaeobotanists are Scott, Seward, Schimper, and Dawson. CLASSIFICATION: See G. Bentham and J. D. Hooker's *Genera Plantarum*, 1862-83; A. Engler and K. Prantl's *Die Natürlichen Pflanzenfamilien*, 1887; Dr. E. Warming's *Den Systematiske Botanik*, 1891, trans. into Eng. and revised, 1904; Engler-Gilg, *Syllabus der Pflanzenfamilien*, 1924. GENERAL MORPHOLOGY, etc.: S. H. Vines's *Student's Text-Book of Botany*, 1902; L. Vialleton's *Éléments de Morphologie des Vertébrés*, 1911; E. C. Jeffrey's *Anatomy of Woody Plants* (Chicago), 1917; F. O. Bower's *Botany of the Living Plant*, 1923; Prof. E. Strasburger's *Practical Botany*, new Eng. ed., 1924; Strasburger's *Text-book of Botany*, 1930; D. H. Scott's *Introduction to Structural Botany* (revised F. T. Brooks), vol. i., 1927, vol. ii., 1932. GEOGRAPHICAL DISTRIBUTION: A. H. R. Griesbach's *Die Vegetation der Erde*, 1872; O. Drude's *Handbuch der Pflanzengeographie*, 1890; A. F. W. Schimper's *Pflanzengeographie*, 1935. PALÆOBOTANY: P. Schimper's *Traité de paléontologie végétale*, 1869-74; J. W. Dawson's *Geological History of Plants*, 1888; A. C. Seward's *Fossil Plants*, 1898-1919, and *Plant Life through the Ages*, 1933; Dr. Mario C. Stopes's *Ancient Plants*, 1910; D. H. Scott's *Studies in Fossil Botany*, 1920, 1923. FUNGI: Dame Helen

Gwynne-Vaughan and B. F. Barnes's *Structure and Development of the Fungus*, 1927. HEREDITY: William Bateson's *Mendel's Principles of Heredity*, 1913, J. Thomson's *Heredity*, 1926, R. C. Punnett's *Mendelism*, 1927. SENSITIVITY OF PLANTS, etc.: Sir J. C. Bose's *Nervous Mechanism of Plants*, 1926, *Plant Autographs*, 1927, *Motor Mechanism of Plants*, 1928, *Growth and Tropic Movements of Plants*, 1929. ECOLOGY: Tansley's *The British Isles and their Vegetation*, 1939, V. Cornish's *The Beauties of Scenery*, 1943. See also J. Britten and G. S. Boulger's *Biographical Index of British and Irish Botanists*, 1893; John Gilmour's *British Botanists*, 1944.

Botany Bay, inlet on the W. coast of the co. of Cumberland, New S. Wales, Australia. On its shore is the township of B. forming a suburb of Sydney. It was discovered in 1770 by Capt. Cook, who landed at a spot now marked by a monument and took possession for the Crown. It received its name from John Banks, the botanist of the party, on account of the great variety of its flora. The tn. was fixed upon as a convict settlement, but the idea was abandoned and the settlement was made at Sydney instead. The first governor was Arthur Phillip, 1788. The transportation of criminals to New S. Wales ceased in 1840.

Bot-fly, any species of dipterous insect of the family *Cestridae*. These flies are large and hairy, with short antennae, and their larvae are usually to be found in mammals. *Gastrophilus equi* is the gadfly of the horse, which lays its eggs on the animal's hairs; the horse is irritated and licks them off, the larvae remain in its stomach until ready to pupate, then pass out and become mature external to their host. *Estrus oris* occurs in the nostrils of sheep; *Æ. tarandi* in the skin of the reindeer; *Hypoderma bovis* on the legs of cattle, and the larvae often occasion warbles or tumours under the skin of the back.

Both, Jan (1610-52), and **Andreas** (1609-50), Dutch painters, b. at Utrecht. They early went to Italy, being two of the first Dutch painters to come under its influence. At Venice it is said that Andreas was drowned in a canal. The two worked together, Jan painting the landscapes into which Andreas painted the figures and animals. Both brothers also executed etchings.

Botha, Louis (1862-1919), S. African general and statesman, first Premier of the Union of S. Africa, son of one of the Voortrekkers, b. at Greytown (Natal). He saw active service in savage warfare and served as field cornet in 1887. Soon after he settled in Vryheid dist., which he represented in the Volksraad of 1897. In the war of 1899 he served under Lucas Meyer, but he soon received higher commissions. He was in command of the Boers at Colenso and Spion Kop. During these conflicts he gained so high a reputation that he was made commander-in-chief of the Transvaal Boers on the decease of Gen. Joubert. After the fall of Pretoria he reorganised the Boer resis-

tance with a view to continued guerrilla warfare. This movement was successful in its aim, for the Boers resisted for 3 years. He was chief representative of his countrymen in the peace negotiations of 1902. He went to Europe with Gens. De Wet (q.v.) and De la Rey in order to raise funds to enable the Boers to resume their former employments. During the period of reconstruction under Brit. rule, Gen. B. gave liberal advice with regard to measures which he thought would tend to the maintenance, order, and prosperity of his people in the Transvaal. After the granting of self-gov. to the Transvaal in 1907, B. was called upon by Lord Selborne to form a gov. In the next year he was present at the colonial conference in London. On this occasion he declared the wholehearted adhesion of the Transvaal to the Brit. empire and his intention to work for the welfare of the country. Owing to a serious disagreement with Gen. J. B. M. Hertzog (q.v.), he re-formed his Cabinet in Dec. 1912, from which Hertzog was excluded. B., however, had a loyal colleague in Gen. J. C. Smuts (q.v.), to whom he entrusted the difficult question of Indian settlement in 1913, which was led by Gandhi (q.v.), who came from India to voice Indian views, and who soon returned there satisfied with the arrangements made. Although B. was a man of great moderation, he could, nevertheless, take a firm and even arbitrary line when the occasion demanded it, as seen in his handling of the Rand strike in Jan. 1914, when he seized the agitators and deported them without a trial, thus bringing about the collapse of the strike. He had terminated a previous strike by an inconclusive agreement with the strike leaders, but the next time he thwarted them. The outbreak of war between England and Germany in 1914 was a testing time for many in S. Africa, for the Ger. agents from Ger. S.W. Africa had been busy among all classes with anti-Brit. propaganda and had met with varying success. It was known further that sev. hundred S. African rebels had joined the Ger. forces. With B. there was no hesitancy; his loyalty to the Imperial Gov. was exhibited in his instant declaration of support for Great Britain. This was a contingency that the Gers. had overlooked, although they were more successful with De Wet, Beyers, and Maritz. He organised the S. African forces under himself as commander-in-chief. His intention was to capture Lüderitz Bay, and thus close it to the enemy as a base for combined land and sea operations. His columns were moving towards this point when, Maritz, the commander of one of them, deserted with his force to the Gers. Later, when Beyers, Kemp, and De Wet headed a rebellion against the Gov., B. took the field against them, captured De Wet, and ended the rebellion. It was not until Jan. 1915 that B. could turn to his original intention of overthrowing the Gers. Though the fighting never reached serious proportions, the natural conditions of the country, the well-planned

obstacles, and the necessarily long lines of communication made progress difficult. The first strategic objective was to seize Windhoek before the Gers. could initiate a guerrilla campaign, and thus paralyse their efforts in the surrounding country. B. commenced his advance in Mar. and reached his objective in May. He then pursued the enemy along the railway to Tsumco, where he destroyed them as a fighting force. Resuming his duties as Prime Minister of the Union, he organised forces to assist the Brit. invasion of Ger. E. Africa, and for the W. front in Europe. He was invited to become a member of the Imperial War Cabinet in England, but sent Smuts, whose absence threw a heavy burden upon him. He came to England after the armistice, and attended the peace conference at Versailles, where he was a most impressive figure, notwithstanding that he was undergoing medical treatment at the time. The terms of the peace treaty were not entirely to his liking, and his frank opinions on them won him the respect of all the delegates. He was also a supporter of the rights of the dominions and the status of their delegates. He returned to Pretoria and d. on Aug. 27, 1919, in his fifty-seventh year, from heart failure following influenza. He was a simple, God-fearing man with a wide knowledge of human nature and a fund of practical wisdom. His patience, tact, and moderation gained him a reputation as a 'manager of men.' His loss was mourned by Eng., Dutch, and natives alike, his kindness and largeness of heart making him beloved by all. At his graveside Gen. Smuts said: 'His was the largest, most beautiful, sweetest soul of all my land and days.' See S. J. P. Kruger, *Memoirs*, 1906; Earl Buxton, *General Botha*, 1924; E. A. Walker, *A History of South Africa*, 1940; Deneys Reitz, *Commando: a Boer journal of the Boer War*, 1943.

Bothnia, former name of a country of N. Europe which extended along the E. and W. coasts of what was then, as it is now, the gulf of B. The E. portion now is included in Finland, and the W. in the Swedish prov. of Norrland.

Bothnia, Gulf of, part of the Baltic Sea between 60° and 66° N. lat., and 17° and 25° 30' E. long. To the S. are the Åland Is.; the E. shore of the gulf is part of Finland, the W. and N., of Sweden and Lapland. The depth varies from 20 to 50 fathoms. Navigation is rendered difficult by the number of small is., sandbanks, and cliffs, or *skærs*, but there are many good harbours. Numerous rivs. flow into the gulf from Sweden and Finland; the alluvial deposit from these has caused the land to encroach on the sea in the upper part of the gulf. The contrary has been the case in the S.W., where the sea is gradually overflowing the land. The salinity of the water is not great, and is less when the rivs. are flowing into it. In winter, however, the whole surface is generally frozen so hard that sledges can be driven over it.

Bothwell, tn. of Lanarkshire, Scotland, situated on the r. b. of the Clyde. It is

a residential quarter for Glasgow. The riv. is crossed by a suspension bridge and also by another bridge which gives its name to the battle fought between the Royalists under Monmouth and the Covenanters in which the latter were utterly defeated in 1679. In the vicinity is the splendid Norman ruin of B. Castle. There is also a priory founded in the thirteenth century. The manse of B. was the bp. of Joanna Baillie (1762-1851), dramatist and poetess. Pop. 3600.

Bothwell, Adam (c. 1527-93), Scottish divine, bishop of Orkney, 1562. On commission for revising *Book of Discipline*, 1563; lord of session, 1565. He was one of the four Scotch bishops who embraced the Reformation. He performed, after Protestant form, the marriage ceremony of Mary and Bothwell at Holyrood House, but soon afterwards deserted her party, and crowned and anointed her infant son, Charles James, at Stirling, 1567. B. was for a time suspended from the ministry by the General Assembly, 1567, for solemnising the marriage of Mary and the earl of B. He exchanged a part of his bishopric of Orkney with Robert Stewart for the abbacy of Holyrood House, about 1570. Imprisoned for a time for opposing Morton. On commission to frame a revised eccles. settlement, 1572; one of the lords of articles at parliament, 1584. See Keith's *Catalogue of Scotch Bishops*, 1824; Mackie's *History of Holyrood House*, 1829.

Bothwell, James Hepburn, Earl of (c. 1536-78), Scottish nobleman. He was the son of the third earl, and succeeded his father in 1556. In addition to the family estates and titles, he succeeded also to the hereditary offices, which included that of the lord high admiral of Scotland. He showed himself at the beginning of his career to be anti-Eng., and he joined himself to the party of Mary of Guise, although he himself was a Protestant. He had a violent quarrel with Arran, a quarrel which originated in his appropriation of a sum of money which was sent by Queen Elizabeth to the lords of the congregation. He was employed by the Scottish courts on many missions, and in 1561 was sent from Paris by Mary Queen of Scots to summon parliament. He made peace with various of his rivals, and although he had but recently been made a Privy Councillor, he again was ordered to leave the city on the outbreak of riots between himself and his enemies. For a short time he suffered imprisonment, it being alleged that he had plotted with Arran against Mary. He broke prison, and although he again submitted to the queen, he was forced into exile owing to the predominance of the influence of Murray. In 1564, being captured on Holy Is., he suffered a short imprisonment again, this time in the Tower. He was recalled, however, to aid Mary in putting down the insurrection of Murray, and he now comes forward as the champion of Mary. Mary married to Darnley was gradually becoming tired of her feeble husband. The murder of Rizzio in Mar. 1566 marks

the beginning of the ascendancy of B., and Mary began to show a preference for him. He was made the most powerful noble in Scotland, estates were showered upon him, and Mary showed her affection for him in other ways also. She visited him at Dunbar; he was wounded, she rode 40 miles to see him; and finally she was present with him when the murder of Darnley was arrived at, and he himself superintended all the arrangements which led to the blowing up of Kirk of Fields. B. stood his trial for the murder, but Lennox was practically forbidden to attend, and B. was declared not guilty. He now made preparations for his marriage with Mary, and although his previous marriage was declared null and void, it is doubtful whether his marriage to Mary was legal according to the law of the Rom. Catholic Church. On May 12, he was created duke of Orkney and Shetland, and on the 15th Mary and he were married according to the Protestant rites. The nobility, however, rallied together to effect his defeat, and he was defeated at Carberry Hill. During the negotiations which followed, it became obvious that a surrender must take place, and B. parted from Mary, reached the Orkneys, and from there sailed to Norway. He was captured by the authorities and sent to Copenhagen. He managed to obtain the goodwill of the king, and efforts to obtain his surrender were in vain. He still corresponded with Mary, but as his restoration was impossible, Mary demanded a divorce, which she obtained in 1570. His later years were spent in solitary confinement which brought on insanity. He d. on Apr. 14.

Consult Laing's *History of Scotland*, 1804; Grub's *Ecclesiastical History of Scotland*, 1861; Burton's *History of Scotland*, 1867; F. Schiern, *Life of Bothwell* (trans.), 1880; G. Chalmers, *Memoirs of James, Earl of Bothwell*, in *Life of Mary Queen of Scots*, 1818.

Bothy, or **Bothie**, originally a cottage or hut, but later the word came to mean a barely furnished and generally uncomfortable dwelling for farm servants. The system prevails in the E. and N.E. dists. of Scotland, and consists of building the outhouses (barns, stables, etc.) of a farmstead in the form of barracks in which the male servants reside.

Bothynoderes, genus of coleopterous insects of the family Curculionidae. The species are prettily mottled, the common colours being grey, black, and white. *B. albidus* (or *Curculio albidus*) is about half an inch long and is white, with the central part of the thorax, a fascia, and 4 spots on the wing-cases black.

Botaniates, see NICEPHORUS III.

Botley, par. of Hants, England, on the Hamble, 6 m. from Southampton. It was the home of William Cobbett. Pop. 1000.

Botocudos, barbarous tribe of S. Amer. Indians of E. Brazil, inhabiting the E. Coast Range. Their name is derived from the Portuguese *botoque*, a plug, with reference to the wooden plugs or disks worn in their lips. They are below

medium height, broad-shouldered, and remarkable for the depth and muscular development of chest. Their features are broad and flat, with high cheek-bones, wide nostrils, and thick lips. They are of a light yellowish-brown colour and have the general yellow tint of Mongolic races.

Botolph, an Eng. saint of whom but little is known beyond the fact that, after a period in a Fr. monastery, he founded a monastery in the midlands. The site of this monastery is unknown, but is believed to be on the R. Witham, on which Boston (Botolph's tn.) stands. He is said to have died 680. His festival day in England is June 17, in Scotland, June 25.

Botosani, commercial tn. of Rumania, cap. of the prov. of same name, 47 m. S.E. of Czernowitz. Pop. 40,000.

Bo-tree, or **Bodhi-tree** (*Ficus religiosa*), order Moraceæ; it is allied to the banyan (q.v.), and is sometimes called the pipal-tree. It has long, sharply pointed leaves from which rain drops off rapidly, and grows in damp forests. The milky latex yields caoutchouc. Vishnu is said to have been born beneath this tree.

Botrychium, genus of ferns of the order Ophioglossaceæ which grow in temperate and tropical lands, and in Britain are represented by *B. lunaria*, the common moonwort. The stem is a subterranean rhizome, the roots are fleshy, branched, and produce no buds, and the leaves grow so slowly that they take 5 years to show aboveground. The sporophylls are petiolate and bear a fertile and a sterile lamina, which are usually both branched. The prothallus is a small, ovoid body, with scattered root-hairs, and usually bear antheridia on the upper, archegonia on the lower, surface. The prothallus of *B. virginianum* remains fixed to the sporophyte for about 5 years.

Botryllus, typical genus of tunicates of the family Botryllidae. The species are submarine, very small, soft, irritable, and contractile, and are found adhering to other bodies in bunches of 10 or 12 arranged like rays of a star round a common centre. They are found in Europe, N. America, and the Mediterranean.

Botrytis, minute fungus to which what is called mildew is often attributable. The tiny plants appear as a brownish-white patch on the object they have attacked, but under a microscope they are seen to consist of upright brown stalks, branched at the tips, each branch bearing pale-coloured spores. They attack the fibres of vegetable fabrics, such as linen and cotton, when placed in damp places, seedling pines, lilies, decayed stems of various plants, and decaying fruit.

Botta, Carlo Giuseppe (1766-1837), It. poet and historian, b. at San Giorgio Canavese, Piedmont. Studied medicine. Became a physician in the Fr. Army. In 1790 he was appointed member of the provisional gov. of Piedmont. After the incorporation of Piedmont with France he went to Paris, where as member of the corps législatif, he gave offence to Napoleon. After the Restoration he became

rector of academies at Nancy and Rouen. In 1830 he was allowed to return to his native tn. and received a pension. He d. in Paris. His works include: *Histoire des peuples d'Italie; Storia d'Italia dal 1490 al 1814*, consisting of Guicciardini's work and his own continuation of it.

Botta, Paul Emile (c. 1805-70), Fr. traveller and archaeologist, son of Carlo Giuseppe B. As physician to Mehemet Ali he accompanied his expedition to Sennar in 1830. He was subsequently appointed consul-general at Tripoli. During 1843 he made his memorable explorations of the mounds of Konyanjik and Khorsabad. His chief work was *Monuments de Ninivé découverts et décrits par P. E. Botta*.

Bottego, Vittorio (1861-97), It. explorer. In 1892 he started from Berbera and reached the Upper Juba, which he explored to its source. Between 1895 and 1897 he explored the neighbourhood of Lakes Margherita and Rudolf, and the Sobat riv. system, but in the latter year was murdered in the Abyssinian highlands by the Somalis. For an account of his first journey see his book *Viaggi di Scoperta nel Cuore dell' Africa*, 1895; for an account of the second see *Seconda Spedizione Bottego*, 1899, by Varmutelli and Citerri.

Bottesini, Giovanni (1822-89), It. contrabassist, b. at Crema in Lombardy on Dec. 24. He went on a concert tour in 1840 which extended to America. During this tour he estab. his fame as the greatest master of the double bass. He directed It. opera from 1846 in Havana, Paris, Palermo, and Barcelona. He became director of the Conservatory at Parma. He composed among other works at least 4 operas and an oratorio. His best-known opera was *Cristoforo Colombo*, produced in Havana in 1847. He was a remarkably clever double-bass virtuoso, and wrote *Méthode complète de Contrebasse*.

Böttger, Johann Friedrich (1682-1719), Ger. porcelain manufacturer. He practised alchemy until Augustus, elector of Saxony, employed him more profitably in his pottery works. He was the first European to reproduce porcelains exactly like the Chinese. With state prisoners for workmen, he manufactured his 'red porcelain,' resembling Chinese 'boccaros' (teapots) at the fortress of Meissen. This was so dense that a lapidary could polish it like a stone.

Botticelli, Sandro, more properly Alessandro di Mariano dei Filipepi (1444-1510), Florentine painter. He derived his name of B. apparently from his eldest brother, who was a broker in a fair way of business, and who seems to have taken charge of the boy; this brother was nicknamed Botticello. He seems to have been physically weak, and was probably at an early age apprenticed, since his father was too poor to permit him to remain at home and do nothing. He would seem to have spent his early apprenticeship with his brother Antonio, who was a goldsmith, but having shown a great aptitude for painting he was apprenticed to Fra

Filippo Lippe. For 8 years he remained under the guidance of this master, and was probably employed in helping to complete the frescoes which Lippi had been commissioned to do at Prato. In 1467 Lippi left Florence for Spoleto, and B. was left to do his work without the influence of the master. At this period he seems to have come under totally fresh influences, from which he learnt much that he would probably never have learned from Lippi. In 1470 appeared one of his great pictures, 'Fortitude,' which is at present in the Uffizi. The realistic influence of this period of his life is also obvious in the paintings of 'Judith and Holofernes,' and 'St. Sebastian.' During



HEAD FROM THE 'THE BIRTH OF VENUS' BY BOTTICELLI

this period he had also come into contact with a number of the painting schools of Florence, and had contracted the friendship of Leonardo da Vinci. A number of the Madonnas which are ascribed from this period to Sandro have been proved not to be by this artist at all, but by imitators of him. Sandro came also under the patronage of Lorenzo the Magnificent, and executed sev. works for him, in addition to incorporating many portraits of the Medici family in some of his most famous pictures. His great patron, however, was another Lorenzo, the son of Pierfrancesco de' Medici. For this patron B. painted his famous 'Primavera' about the year 1478. He painted sev. magnificent frescoes, and also executed 19 small cuts for an ed. of Dante. He was employed with other artists in the decoration of the chapel of Sixtus IV. at the Vatican, and he was probably responsible for the papal portraits which decorate that chapel. Of his celebrated frescoes of this period may be mentioned 'The History of the Life of Moses,' 'The

Destruction of Korah, Dathan, and Abiram,' and 'The Temptation of Christ by Satan.' This period may be taken as the greatest in the life-work of the painter, and it is probably to this period that we owe the production of another 'Adoration of the Magi.' From Rome he returned to Florence, where he continued his labours for the next 10 years. Amongst the works which he produced at this time are 'The Magnificat,' 'Abundance,' 'Birth of Venus,' 'Pallas and the Centaur,' 'The Annunciation,' and 'The Last Communion of St. Jerome.' The death of Lorenzo the Magnificent led to considerable political disturbances in Florence, but Sandro seems to have still continued his labours with his own patron Lorenzo, and to have executed a number of drawings for him. During the period which followed the execution of Savonarola we find that B. became a devoted follower of that friar, and all his works of this period are marked by the strong religious conviction which he seems to have felt. To this period are due the pictures of 'The Nativity' and 'Magdalene at the Cross.' After the beginning of the sixteenth century we find very few notices of him; we however find him still acting on committees of his fellow artists. Through all his paintings there runs the vein of poetical and mystical fantasy. Side by side, however, with his capacity for strong religious convictions ran the rough and ready humour of the Florence of his time. See Y. Yashiro, *Sandro Botticelli* (3 vols.), 1925, and *Sandro Botticelli and the Florentine Renaissance*, 1929; A. Venturi, *Botticelli*, Eng. trans. 1927.

Böttiger, Carl Vilhelm (1807-78), Swedish author, prof. of modern literature at Upsala Univ. He wrote principally lyric poetry, distinguished by graceful sentiment and style. His collected works have been pub. in 6 vols.; the best known are *Nyare sanger*, 1833, and *Lyriska Stycken*, 1837-39.

Böttiger, Karl August (1760-1835), Ger. archaeologist, after holding the rectorships of Guben (1784), and Bautzen (1790), became prin. of the gymnasium at Weimar (1791), where he was intimate with Wieland, Goethe, and Schiller. His literary energy was dissipated between studies on a Rom. lady's toilet, anct. Gk. sculpture, court pages, etc.

Bottini, Enrico (1837-1903), It. surgeon, b. at Stradella, in the prov. of Pavia. He was appointed lecturer in obstetrics and surgery at Novara in 1865, and later prof. of surgery at Pavia. He was afterwards a member of the Chamber of Deputies. His work on the use of carbolic acid in operations was pub. in 1866; he was also noted for his skill in operative surgery. He was among the first to recognise how parasitic organisms help to cause disease.

Bottle (from Fr. *bouteille*, through dimin. of Low Lat. *butis*, a flask, from which is also derived the Eng. *butt*). The word denotes a vessel, usually of glass, with a narrow neck, for containing liquids. The first Bs. were probably made of skins. The art of making glass Bs. and

drinking glasses was known to the Romans at least before A.D. 79, for these articles and other vessels have been found in the ruins of Pompeii. In the *Iliad* the attendants are represented as bearing wine for use in a B. made of goat's skin. The anct. Egyptians used skins for this purpose, and also the Gks. and Romans. In S. Europe Bs. of skin are used for transport of wine, and in parts of Asia and Africa for carrying and storing water. The Egyptians also had vases and Bs. of stone, alabaster, glass, bronze, silver, and gold. The Phœnicians and Romans made Bs. of glass and stone. Reference to skin Bs. is made in the N.T. in the phrase 'put new wine into new Bs.,' signifying that old Bs., being cracked and thin, would easily burst from the pressure of the gas from the new wine. Bs. were made in England about 1558. A B. which contained 2 hogsheads was blown at Leith in Scotland in Jan. 1748. In modern times Bs. are usually made of glass. In Chicago Bs. made of paper were invented in 1887 and were largely used. They are light, cheap, and unbreakable. The insides are fitted with a composition which is intended to resist the action of dyes, acids, and spirits, etc. B.-making is a huge, flourishing, and advancing industry and great developments have been made in Czechoslovakia, U.S.A., and Germany. In 1886 appeared Ashley's patent for making glass Bs. by machinery; the modern machine can make 25,000 Bs. in twenty-four hours. Labour-saving machinery for filling has been introduced, and later developments are machines for corking, stopping, labelling, and washing. In England the B.-making industry is chiefly carried on at St. Helens and Sunderland, and also in the 'Potteries' dist. See also GLASS.

Bottle Chart, see under OCEAN.

Bottle Gourd, hard outer skin of the fruit of the calabash-cucumber, which makes a useful water-bottle. The plant on which it grows is a member of the order Cucurbitaceae, and is known as *Lagenaria vulgaris*.

Bottle-nose, name applied to various species of cetaceous mammals of the family Physteriidae and genus *Hyperoodon*, which are closely related to the sperm whales. These whales yield spermaceti and oil; they can dive deeply and remain under water for a long time. *H. rostratus* is about 30 ft. long and is found in the N. Atlantic.

Bottle-tree (*Sterculia rupestris*), evergreen tree, the bole of which is bottle-shaped. Its fibre is used for net-making.

Bottling Machine, the general term applied to a machine for filling bottles with any liquid, such as medicine, scent, spirituous liquors, etc., so that the air is excluded. The bottle must first be prepared by a thorough cleansing with hot water and soda, followed by a final washing in pure cold water. The earlier form of machine was simple in construction. It consisted of an open tank from which ran siphon tubes, usually 6 in number. Below these ran a shelf on

which the bottles rested, while lower still was a trough to receive waste liquid. The operator started the machine by sucking the siphon tubes in turn and putting a bottle on each tube. As each bottle was filled, it was removed and another substituted. Later machines work by gas pressure in a closed tank instead of by siphonage. Codd's machine, for the bottling of aerated waters, is one of the best Eng. makes of the kind, but is more complicated than that described. Among the best-known makes of press-and-blow machines are those of Moorshead, Edward Miller, and Hartford. In the case of automatic machines, and semi-automatic too, the neck is the first part made; but with other machines, such as gravity-fed machines, the processes of making the neck and the embryo of the body are combined and then the blown-up body is completed. The most recent machines are the gravity-fed machines as opposed to the bottle-blowing type. These were first made in the U.S.A. The best-known makes are those of Moorshead, Redfern, Graham, and Owens—all Amer. firms.

Bottom Heat, in horticulture, an artificial temp. communicated from below by means of fermenting vegetable matter to the soil in which plants grow. It is used in order to keep the temp. between the degrees of 60 and 90 F. in forcing vegetables, flowers, or fruits.

Bottomley, Gordon (1874-1948), Brit. poet and dramatist, b. at Keighley, and educated at the grammar school there. Owing to early and continuous ill health he was obliged to lead a secluded and inactive life, but none the less it was an inner life of depth and fullness. His first book of verse, *The Mickle Drede*, appeared in 1896, and this was followed at intervals by a dozen or more vols. of poems, mostly in dramatic form. His first major vol. of poetry was *The Gate of Smaragdus*, pub. in 1904. The plays *The Crier by Night* (1902) and *The Riding to Lihend* (1909) first illustrated his devotion to the cause he had at heart—the resuscitation of Eng. poetic drama, a cause he shared with W. B. Yeats and Lascelles Abercrombie. But it was not until his play, *King Lear's Wife* (1915), a prelude to Shakespeare's play, was produced at the Birmingham repertory theatre and by many amateur companies that he became in any sense a popular poet. Yet, although that play and *The Riding to Lihend* were produced at the Cambridge festival theatre and *Britain's Daughter* (pub. with *Gruach* in a 2-play vol.) at the Old Vic, B. never had any notable success on the regular stage, and in his later period he confined himself to shorter dramatic poems, like *The Widow*, *The Singing Sands*, and *Ardevorlich's Wife*, suitable for production by small groups of actors in ordinary small rooms. Although the more ambitious and beautiful play, *Gruach* (1921), a prelude to Shakespeare's *Macbeth*—which was awarded the Femina-Vie Heureuse prize in 1923 and produced in London 1924—perhaps marks the peak of his achievement, the later, briefer,

lyrical dramas are his most characteristic work. In form, influenced by Yeats's and Sturge Moore's experiments after the manner of the Jap. *No* plays, their choice of theme gave them a distinction all their own. He brought back into verse drama much of the romanticism and at times extravagance of the post-Elizabethan dramatists. He had a remarkable rich vocabulary, and the nicest skill in the manipulation of an unusual range of subtle and varied rhythms. In *Poems of Thirty Years* (1925) he collected all of his lyrical verse which he deemed worthy of preservation. In 1925 he was awarded the Benson medal of the Royal Society of Literature, of which he became a fellow in 1926, and he received honorary doctorates from Aberdeen (1930), Durham (1940), and Leeds (1944).

Bottomley, Horatio William (1860-1933), Eng. journalist and financier. He was for a time in a solicitor's office in London, and then, after various business experiences, he turned to journalism and founded the *Financial Times*. His next journalistic venture was the highly successful weekly, *John Bull*. But he is remembered chiefly for his various company promotions and for the remarkable skill with which he defended the various actions brought against him for fraud. He was Liberal M.P. for Hackney from 1906 to 1912 and from 1918 to 1922, though he took an independent line. In 1922 he was sentenced to 7 years' penal servitude for fraud in connection with Victory Bonds. In the First World War he gained a great reputation as a patriotic orator, and as a 'lay lawyer' there is no doubt that he can have had few equals.

Bottomry, maritime term. When it is a matter of vital importance to raise money for the proper completion of a ship's voyage, and there is no time to communicate with the owners, and the master has exhausted every other means for raising money, then he may 'hypothesize' the vessel, and, in some cases, the cargo, i.e. he may give a bond or written contract for the loan of the money advanced on the security of the ship and freight. This bond binds the owners to repay the loan within a limited time after the safe arrival of the ship, but if the ship does not arrive safely the money is not repaid. The holder of a B. bond has a right to be paid before a mortgagee, but will not be paid until claims for wages or salvage have been satisfied. Where sev. bonds have been given, the last comer takes priority over the others.

Bottomry, tn. of Germany in the prov. of Westphalia in the Ruhr coalfield, which accounts for large increase in pop. from 25,000 (in 1906) to 86,000 in 1933.

Botulism (from Lat. *botulus*, a sausage), sausage or meat poisoning; a form of ptomaine poisoning caused by the introduction into the system of such products of decomposition. *Botulinic acid* is an acid detected in sausage poisoning. The disease appears to have some affinities to *encephalitis lethargica* (q.v.), as was evident during the alarm in 1918, during the

First World War when good or any food was scarce, caused by the reports that B. had broken out in London and Sheffield. The symptoms seemed to be those commonly associated with B., and accordingly it was decided that Sir Arthur Newsholme should conduct a complete investigation with the Medical Research Committee. The results of his investigations were pub. in 'A Report of an Inquiry into an Obscure Disease, *Encephalitis Lethargica*.' The bacillus *botulinus* was not found in the bodies of any of the victims, and thus the scare of that year was conclusively ended. It seems probable that this outbreak of encephalitis baffled the authorities owing to the fact that up to that time *encephalitis lethargica* had escaped identification, being known as infantile paralysis. Consult Ernest C. Dickson's monograph on *Botulism*, being No. 8 (1918) of the series in the Rockefeller Institute for Medical Research.

Botwood, seaport of Newfoundland at the mouth of the Exploits R. A railway runs from B. into the interior. It is the port for the timber products of Grand Falls and has now become important as a transatlantic airport.

Botzen, or **Bolzano**, the most northerly prov. of Italy, in the S. Tyrol, has a pop. of 238,000, of whom 77 per cent are Ger. and only 9 per cent It. The cap. of the same name is the most southerly tn. of the Ger.-speaking ter. (see also **BOLZANO**). In 1910 only 5 per cent of the pop. of the tn. were It., but in 1921 25 per cent. The inner part has narrow and picturesque streets. The beauty of its surroundings makes it a tourist resort of the first rank. It was taken by the Its. on Nov. 8, 1918. Pop. (tn.) 33,000.

Botzen, city, see **BOLZANO**.

Bouch, Sir **Thomas** (1822-80), Eng. civil engineer, b. at Thursley in Cumberland. His earliest tastes were for engineering, and in 1839 he began his career with a civil engineer. After this he was an engineer on the Stockton and Darlington railway, and in 1849 became manager and engineer of the Edinburgh and N. railway, and it is to him that the Forth and Tay owe their 'floating railways.' He was the engineer of the Tay Bridge, finished in 1877, for which the freedom of the tn. of Dundee was conferred upon him. He was also made a knight. The disaster of the Tay Bridge in 1879 was the cause of his health giving way, owing to mental shock, and of his death in the following year.

Bouchain, vil. in the dept. of Nord, France, in the arron. of, and 12 m. from, Valenciennes, on the Sensée and the Escaut. Pop. 2400.

Bouchardon, **Edme** (1698-1762), Fr. sculptor, b. at Chaumont. He studied in Paris under the younger Coustou, and later in Rome. His best-known work is the 'Fountain of Grenelle' in Paris, while an equestrian statue of Louis XV. was destroyed in 1792.

Boucher, **François** (1703-70), Fr. painter, b. in Paris. Studied at Rome, and became member of the Academy in 1734. In 1765 he was given a position as painter

to Louis XV. The number of his figure or landscape pictures and drawings is said to have exceeded 10,000, and he also executed engravings. He became director of the Fr. Academy, which post he retained until his death.

Boucher, **Jonathan** (1738-1804), Eng. clergyman and political writer, b. at Blencogo, near Wighton in Cumberland. He emigrated to Virginia about 1757, where he was engaged in teaching. Determining to take holy orders, he returned to England, and was ordained in 1762, and, in the same year, became rector of Hanover, King George co. He held this and subsequent charges until 1775, when he was obliged to resign, owing to his proclaimed royalist views. Driven from the country by the Revolution, he returned to England, where he was presented to the vicarage of Epsom in Surrey, which he retained until his death. B. during his residence in America had been on terms of close friendship with Washington, intimacy only being broken by their differences regarding Amer. independence. His most important work was his *View of the Causes and Consequences of the American Revolution*, 1797. He devoted many of the last years of his life to the compilation of *A Glossary of Archaic and Provincial Words*, which was uncompleted at the time of his death.

Boucher de Crèvecœur de Perthes, **Jacques** (1788-1868), a Fr. archaeologist, b. at Rethel. He was employed by Napoleon in various missions to Italy, Germany, and Austria. After the Restoration he lived at Abbeville. He wrote poems as well as works on archaeology. His chief work on the latter subject is *Antiquités celtiques et antédiluviennes* (1847-64). His investigations on stone weapons and other remains of early civilisation in Tertiary strata made him famous.

Bouches-du-Rhône, maritime dept. of S.E. France, situated at the mouth of the Rhône. It has an area of 2000 sq. m. It consists of 3 arrons., viz., Marseilles, Aix, and Arles. The W. portion, known as the Camargue, is a marshy and unhealthy plain. The Maritime Alps slope down through the N. and E. to the basin of the Rhône. The beautiful Mediterranean climate is affected by the mistral. The amount of arable land is very small. Wheat and oats are grown in the Camargue and the plain of Arles, and olive trees are largely grown in the N.E. The vine is also cultivated. Iron is worked, and there are large coal and lignite mines. Among the chief industries are salt-production, oil distilleries, metal founding, soap and perfume making. There are also brandy distilleries and sugar refineries. Marseilles is the cap., and the second seaport of France. Shipbuilding is carried on here. The pop. is 976,200.

Boucicault, **Dionysius** (Dion) **Lardner** (1822-90), Irish dramatist and actor, b. at Dublin; educated at Univ. College, London. He made an immediate success with *London Assurance*, at Covent Garden, in 1841. He soon produced other pieces, among them *Old Heads and*

Young Hearts, Louis XI., and The Corsican Brothers. He made his first appearance as actor in 1852, in a play of his own, *The Vampire*. From 1853 to 1860 he was in America. On his return to England he produced the first of a series of Irish plays, entitled *The Colleen Baun* (1859), at the Adelphi Theatre. This met with great success in the United Kingdom and in America. It was followed by *Arrah-na-Pogue* (1864) and *The Shaughraun* (1875). His acting in these pieces won for him a high reputation. He wrote over 50 pieces, alone or in collaboration.

Boudin, Eugène Louis (1825-98), Fr. marine painter. Studied in Paris. Led the École St. Simeon school of artists, so named from the fact that its headquarters were at a farm of that name. The group included, among others, Corot, whose follower B. was, Monet his disciple, Isabey, Millet, and Courbet. He is especially noted for his riv. scenes. His 'Corvette russe' was bought for the Luxembourg State Gallery in 1888, as also was his 'Rade de Villefranche.' He was awarded the Legion of Honour in 1898.

Boufarik, tn. of Algeria, 23 m. S. of Algiers by rail. Pop. 13,000.

Bouffiers, Louis François, Duc de (1644-1711), marshal of France who attained great distinction, and was descended from one of the oldest families in Picardy. Serving under Condé, Turenne, Créqui, and Catinat, he attained rapid promotion, and his marshal's baton in 1693. His masterly defence of Namur in 1695 against William III. and of Lille in 1708 against Prince Eugene received recognition by the king, and he was made a duke and peer of France. His ability was clearly shown by the manner in which he conducted the retreat from Malplaquet in 1709; his death occurred on Aug. 22, at Fontainebleau.

Bouffiers, Stanislaus Jean, Marquis de, son of the marquise de B., mistress of Stanislaus, king of Poland, b. at Lunéville in 1737. He was distinguished for his elegance of manners and conversation. He was destined for the Church, but abandoned the idea and entered the military service. He emigrated from France to Prussia, 1792. His works consist of poems, travels, *éloges*, and tales. In 1784 he reached the grade of *maréchal-de-camp*, and in 1785 became governor of Senegal in Africa. His character is summed up in the following epigram, attributed to Antoine de Rivarol: 'Abbé libertin, militaire philosophe, diplomate chansonnier, émigré patriote, républicain courtisan.' He d. in 1815.

Bougainville, the largest member of the Solomon Is., which belonged to Germany from 1899 to 1914, and was assigned to Australia after the First World War. The is. is named after Louis B. (q.v.). He landed here about 1766 when on a voyage of discovery round the world. B. was the scene of considerable fighting during the Second World War, when it was occupied by the Jap. U.S. marines landed there in Nov. 1943, establishing a beach-head on Empress Augusta Bay and occupying the vil.

of Piva (Nov. 14). A heavy Jap. counter-attack was repulsed in Mar. 1944, with large enemy losses. Amer. forces consolidated the position, and by the end of the year handed over to Australian forces, who began the systematic liberation of the is. By July 1945 almost the whole is., over 3000 sq. m. of ter., had been reconquered, and over 10,000 natives freed. See PACIFIC CAMPAIGNS, or FAR EASTERN FRONT, IN SECOND WORLD WAR.

Bougainville, Louis Antoine de (1729-c. 1814), Fr. navigator, b. in Paris. Studied law, but entered the military profession in 1753. At the age of 21 he pub. a treatise on the integral calculus as a supplement to L'Hôpital's treatise, *L'Analyse des infinitésimels*. In 1755 he became secretary to the Fr. embassy in London. In the next year he went to Canada as captain of dragoons and aide-de-camp to Montcalm. He was rewarded with the rank of colonel and the cross of St. Louis. He served in the Seven Years' war. He undertook the task of colonising the Falkland Is., but the Fr. Gov. gave it up to the Spaniards. He then went on a voyage of discovery which lasted 2 years, 4 months. Saw active service in the navy, became vice-admiral in 1791. He was a senator under Napoleon I., a count of the empire, and a member of the Legion of Honour. D. in Paris.

Bougainvillea, S. Amer. plant of the order Nyctaginaceæ. The flowers are arranged in groups of threes, and are surrounded by an involucre of petaloid bracts, red or lilac in colour. *B. spectabilis* is a beautiful tropical creeper with lilac-coloured bracts.

Bough, Samuel (1822-78), Eng. landscape painter, son of a shoemaker, b. at Carlisle. He never visited a school of art. In 1845 he obtained employment as scene painter at Manchester and later at Glasgow, where he married a singer, Isabella Taylor. In 1849 he began an earnest study of nature, working at Hamilton and Port Glasgow. He also supplied landscape illustrations for books. He became a member of the Royal Scottish Academy in 1875. Chief pictures (mainly water-colour) are 'Shipbuilding at Dumbarton,' 'Canty Bay,' 'The Rocket Cart,' and 'Borrowdale.'

Boughton, George Henry (1836-1905), Eng. painter, b. near Norwich, was taken as an infant to Albany, New York, but took up his residence in London in 1862. He became a member of the Royal Academy in 1896. He exhibited many pictures at the Royal Academy. Sev. of his pictures represent the old Puritan life in New England. The Tate Gallery has his picture entitled 'Weeding the Pavement.'

Boughton, Rutland, Eng. composer, b. at Aylesbury, Jan. 23, 1878; entered the Royal College of Music as a student in 1900. He supported himself by playing in an orchestra, and later by teaching at the Midland Institute of Music in Birmingham, where he continued until 1911. In 1914, in collaboration with Reginald Buckley, he founded the Glastonbury

Festival School of Music Drama, and it was here that his most celebrated work, the music drama, *The Immortal Hour*, was produced. The Glastonbury Festival was revived after the First World War, when 2 other operas by B., *The Birth of Arthur* and *The Round Table*, were performed in Aug. 1920. In 1922, *The Immortal Hour* was produced in London, where it was an assured success. B. estab. a reputation as a composer of marked originality with a strong romantic and idealistic appeal. Other works include the music dramas, *Alkestis*, *The Queen of Cornwall*, and *Bethlehem*; the ballets, *Snow White* and *May Day*; *The Moon Maiden*, a choral ballet; *Agincourt*, a dramatic score for male voices; 2 symphonies, *Cromwell* and *Deirdre*; and 2 string quartets. Publications: *Bach*; *The Reality of Music*; *The Nature of Music*. B. was awarded a civil list pension in 1938.

Bougie, cylindrical instrument made of waxed silk or other suitable material which may be passed into the gullet, urethra, or other passage for the purpose of dilation or examination. The term is also applied to a long and thin suppository shaped in moulds or glass tubes.

Bougie, seaport of Algeria, 120 m. E. of Algiers. It is beautifully situated on the slope of Mt. Guraya, and is defended by a wall since the Fr. occupation. It is an anct. tn., and was the Saldæ of the Romans. In the fifth century it was the chief seat of the Vandals. Under the Arabs it was named the Little Mecca. The tn. fell into decay after the sixteenth century, and when captured by the Fr. in 1833 it consisted of little more than a few fortifications and ruins. It has now become a strong fortress and a port of great commercial value. The Fr. word for candle is probably derived from the name of the tn., candles being first made of wax imported from B. Pop. 31,000.

Bouguer, Pierre (1698-1758), Fr. mathematician. His father was regius prof. of hydrography at Croisic, Lower Brittany. At an early age young B. succeeded his father as prof. In 1727 he gained a prize given by the Academy of Science for his paper 'On the best manner of forming and distributing the masts of Ships.' In 1729 he pub. *Traité d'optique sur la gradation de la lumière*. He became prof of hydrography at Havre, and succeeded Maupertuis as associate geometer of the Academy of Sciences.

Bouguereau, Adolphe William (1825-1905), Fr. painter, b. at La Rochelle. Studied art at the Ecole des Beaux-Arts during the years 1843-50, when he won the Grand Prix de Rome. This enabled him to study in Italy until 1855. In 1847 he began regularly to exhibit at the Salon. In 1855 he exhibited 'The Martyr's Death' (the body of St. Cecilia borne to the Catacombs), which was afterwards placed in the Luxembourg. He received a gov. commission to paint the emperor's visit to the sufferers by the inundations at Tarascon.

He is at his best in classical and antique subjects, for his modern works show

defects in the treatment of costume. Among his chief works are 'The Four Divisions of the Day,' 'A Bacchante,' 'The Return from the Field,' 'Return of Spring,' 'Homer and his Guide,' 'Mater Afflictorum' (purchased by the Gov. for 12,000 fr. and now in the Luxembourg), 'Triumph of Venus,' 'Philomela and Procne,' 'The Little Beggar Girls.' Many of his pictures, notably 'The Triumph of Venus' and 'Charity,' are popularly known through engravings. He was a member of the Legion of Honour in 1856, an officer of the order in 1876, and commander in 1885.

Bouhours, Dominique (1628-1702), Fr. critic, b. in Paris. Entered the society of Jesuits, and was appointed to read lectures on literature in the college of Clermont in Paris, and on rhetoric at Tours. He became preceptor of the 2 sons of the duke of Longueville, who d. in B.'s arms. He wrote an account of the death of his former patron. B. was sent to Dunkirk to the Romanist refugees from England, and he pub. sev. books during his missionary work there. Among these were *Les Entretiens d'Ariste et d'Eugène*, a critical work on the Fr. language. Other works are *La Manière de bien penser sur les ouvrages d'esprit*, *Doctes sur la langue française*, and *A Life of St. Ignatius*. D. at Paris.

Bouillabaisse is the name of a Fr. dish, popular especially in Provence. It is composed of a large fish, to which are added sev. smaller ones cut up; onions, saffron, sliced tomatoes, olive oil, etc., are then put in, and the whole cooked in a casserole.

Bouillé, François Claude Amour, Marquis de (1739-1800), Fr. general, celebrated for many exploits before the era of the Revolution. He held liberal principles and sat in the first assembly of the Notables, and after attempting to assist the unfortunate Louis XVI. in pursuing his journey from Varennes after his flight from Paris, he quitted France and served under the allies. He d. in London. His *Memoirs of the French Revolution* rank deservedly high.

Bouillon, fortress in the prov. of Luxembourg, Belgium, situated on the R. Semois, 9 m. S.E. of Sedan. Pop. 2800. Here Napoleon III. of France spent the first night of his exile after the battle of Sedan, 1870.

Bouillon, Godfrey de, see GODFREY DE BOUILLON.

Bouilly, Jean Nicolas (1763-1842), Fr. author and dramatist, b. near Tours on Jan. 24. At the commencement of the Revolution he held sev. high offices under the new gov., and was largely responsible for the organisation of primary education. He retired from public life in 1799, and devoted himself to literature. He wrote the musical comedy *Pierre le Grand* for Grétry's music, the opera *Les Deux Journées* to Cherubini's music, and *L'Abbé de l'épée*. Among other books he wrote the following: *Causeries d'un vieillard*, *Contes à ma fille*, *Les Adieux du vieux conteur*. The libretto of Beethoven's *Fidelio* was founded on his *Leonore*.

Boulainvilliers, Henri de, Comte de Saint-Saire (in Normandy) (1658-1722), Fr. political writer and historian. His works, pub. posthumously, include: *Histoire de l'ancien gouvernement de la France*, *Histoire de la pairie de France*, *État de la France*.

Boulak, or Bulak, the port of Cairo, situated on the Nile; it is connected with Cairo by an electric tramway and forms a N.W. suburb of the city. It formerly contained the famous Egyptological Museum, now removed to Cairo. The great national printing establishment, founded by Mehemet Ali, is situated at B.

Boulanger, George Ernest Jean Marie (1837-91), Fr. general, b. in Apr. at Rennes. He entered the army in 1856, and estab. his reputation as a soldier by services in Italy, Cochín-China, and in the Franco-Prussian war. In 1880 he was made brigadier-general and given the command of an army corps, this advance being due principally to the influence of the duc d'Aumale. As director of infantry at the War Office, a post to which he was appointed in 1882, he made a name as a reformer. On all sides now he was regarded as the man who would avenge the defeats of 1870. In 1884 he had been commander of the army at Tunis, and in 1886 he was appointed war minister. As war minister he got rid of his former patron, the duc d'Aumale, erasing his name from the list of active generals. On all sides this was regarded as a piece of deliberate ingratitude, but his tremendous popularity did not suffer. In 1887 he came out of office with the ministry, and was not reappointed. He was, however, given the command of an army corps. B. was now the most popular man in France, and was urged to run for the presidency. In 1888 he was taken off the list of active officers for various acts of insubordination. He immediately entered politics and started an agitation for the revision of the constitution. Some of his moderate supporters were beginning to be alarmed. He resigned his seat as a protest, and was immediately returned by an overwhelming majority for one of the divs. of Paris. At this point had he struck the threatened blow he might have been successful, but he failed to seize his opportunity, and in the Apr. following he fled the country on the issue of a warrant for his arrest on a charge of treason. The Boulangerist movement survived his voluntary exile for a little. In Oct., in his absence, he was condemned for treason. Finally, after settling in Jersey, he committed suicide in Sept. on the grave of his mistress in Brussels.

Boulanger, Pierre Emanuel Hippolyte, see BOULENGER.

Boulangerite (named after one of its discoverers, Boulanger, a Frenchman), a non-crystalline mineral of the colour of lead. It exists in bacillary, amorphous masses, slightly granulated. The formula for B. is $Pb_2Sb_2S_7$, and the sp. gr. 8 to 6.

Boulay de La Meurthe, Antoine (1761-1840), Fr. politician, son of an agric. labourer, b. at Chamousey in the Vosges,

on Feb. 19. He acquired a reputation as a lawyer and speaker, and supported the revolutionary cause. He represented La Meurthe in the Council of Five Hundred. He was known as an opponent of Jacobinism and of the Directory despotism. Under the empire he helped to compile the Civil Code. Received the grand cross of the Legion of Honour, and the title of count. He was a member of Napoleon's privy council. He d. in Paris. His publications include 2 books on Eng. hist.

Boulder: 1. Tn. of B. co., Colorado, U.S.A. It is situated at the foot of the Front Range on B. Creek. It is the centre of a large mining dist. It is served by the Union Pacific and the Colorado and N.W. railways. Pop. 12,900. 2. S. Australian mining tn., connected by rail with Kalgoorlie. Pop. 7000.

Boulder Clay (Ger. *Blocklehme*, or *Grundmoräne*; Swedish *Krossstenslera*; Fr. *argile à blocs*), kind of clay, containing stones, that has a very extensive distribution. It is found in the Brit. Isles, Scandinavia, Holland, Germany, central and N. Russia, and other mountainous dists. of central and S. Europe. It varies in depth from a few ft. to 20 or 30 yds.; as a rule the depth varies with the height of the place it is found in, the thickest deposits being in low-lying dists. It contains all sizes of stones, from pebbles to huge boulders, the stones found being local in character. They are generally worn smooth, and bear traces of having been subjected to great pressure. The B. C. takes the colour of the underlying rocks; thus the clay over Triassic and Old Red Sandstone rocks will be red; over carboniferous formations, black; over Silurian rock, buff or grey; and over chalk formations, white. In some low-lying dists. the B. C. is arranged in what are known as 'drums' or 'sowbacks'; these are long parallel banks of which the general direction is in correspondence with the course taken by the boulders therein, and also with the marks, or striae, on the underlying rocks. Examples of such formations may be seen in Nithsdale and in the lower valleys of the Teviot and the Tweed. The 'crag and tail' formation may be observed also in these and other regions. B. C. is often found piled up on the side of a prominent hill, the face of which is in the direction in which the boulders in the clay have travelled; this is known as 'crag and tail'. Examples are to be seen on isolated hills near Edinburgh, and notably in Edinburgh Castle. B. C. is unfossiliferous, save for foraminifera, which have been found in widely separated regions. Other names for it are 'till' and 'ground moraine.' It is now generally believed to have been formed by glacial action. See GLACIAL PERIOD.

Boulder Dam, big dam, completed in 1935-36, on the Colorado R., in Black Canyon on the borders of Nevada and Arizona, where the riv. enters on its last pronounced southward reach. The dam is over 700 ft. above the bed rock and raises the water level 584 ft.; it is about

1200 ft. in length along its crest. The total land in all states to be irrigated is some 2 million ac., and the dam holds 10 billion gallons of water, supplying a generating plant with a capacity of 2,000,000 h.p.



Paul Popper

BOULDER DAM

Boulders, Erratic, see ERRATICS.

Bouls (Gk. *βουλη*, advice, thence council), term in auct. Greece for an advisory council. Such councils existed from Homeric times in most Gk. states, the most celebrated being the Athenian B.

Boule Work, see BUHL WORK.

Boulenger, or **Boulanger**, **Pierre Emmanuel Hippolyte** (1837-74), Belgian landscape painter, studied in Brussels Academy and at Tervueren. Exhibited at Brussels exhibition, 1866, at Ghent, 1867, his pictures winning much notice. The institution of the Société Libre des Beaux-Arts (1868) was largely due to his influence, also its jour., *L'Art Libre* (1871). In 1872 B. won a medal for his *Allée des Charmes*.

Boulevard (Fr., cf. Ger. *Bollwerk*, Eng. bulwark), term applied to the rampart or outer fortification of a tn. In France and Germany these anct. fortifications have frequently been demolished, levelled, and the broad space thus obtained planted with trees and used as a promenade. Hence the term now denotes a broad avenue, designed for walking or driving. The most celebrated Bs. are those of Paris.

Boulger, **Demetrius Charles** (1853-1928), Eng. publicist and student of oriental

affairs. His works include: *England and Russia in Central Asia*, 1885; *Life of Gordon*, 1896; *History of China*, 1900; *India in the Nineteenth Century*, 1901; *History of Belgium*, 1902-09; *The Battle of the Boyne and the Formation of the Irish Brigade*, 1912; *Holland of the Dutch*, 1913; *England's Arch-Enemy*, 1914; *Reign of Leopold II.*, 1925.

Boulimia, see BULIMIA.

Boulogne-sur-Mer, seaport in the dept. of Pas-de-Calais, France. Pop. 52,000. It is situated at the mouth of the R. Liane, on the Eng. Channel, 22 m. S.W. of Calais, and it is connected with England by a daily Channel service to Folkestone. It is the Bononia Gessoriacum of the Roms. Henry VIII. took the tn. in 1544, but it was restored to the Fr. in 1550. Napoleon I. mustered his army at Boulogne in 1802, and a column to the grand army, 176 ft. high, capped by a bronze statue of Napoleon, commemorates his projected invasion of England. The cathedral of Notre-Dame, in the It. Renaissance style, was erected (1827-66) on the site of the Gothic cathedral, which was destroyed during the Revolution, and of which only the crypt remains. The cathedral was damaged during the Second World War, but not beyond repair. B. has a fine harbour, which, in recent years, was much improved. The chief exports are dried fish, wine, leather, watches, and textiles. The chief industry is herring, cod, and mackerel fishing; and there are manufs. of soap, pens, glass, carriages, and cement. Fish-curing and shipbuilding are also carried on. It is a popular seaside resort in the summer. During the First World War the tn. was devoted almost entirely to military purposes, being the Brit. army base, except for a time during the retreat from Mons, when the army base was removed to Saint-Nazaire. It was then also the depot of the B.E.F. Labour Corps. Millions of Brit. soldiers passed through the tn. and were accommodated in its rest camps. The tn. was then under Brit. administration. The casino and many hotels were placed at the disposal of the Red Cross. For the coolness and courage displayed by its inhabs. during the air-raids of 1917-18, the tn. was awarded the Croix de Guerre. The tn. suffered severely during the Second World War, and presented a scene of destruction when finally entered by Brit. and Canadian troops of the Army of Liberation on Sept. 22, 1944. The last centre of Ger. resistance was in the citadel, an old Fr. fort, which the Gers. had rearmend. See WESTERN FRONT IN SECOND WORLD WAR.

Boulogne-Billancourt, tn. of France in the dept. of Seine, adjoining the Bois de Boulogne, Paris. It has linen bleacheries, chemical works, and perfume factories, and makes motors and machinery. Pop. 75,000.

Boulonnais, the name of a former div. of France, now situated in Picardy. Its cap. was Boulogne-sur-Mer.

Boult, **Sir Adrian Cedric** (b. 1889), Eng. conductor; b. at Chester, Apr. 8. Educated at Westminster School and Oxford

Univ., where he studied music under Sir Hugh Allen; later, studied music at Leipzig under Hans Sitt, Eugen Lidner, and devoted attention to the methods of Nikisch. Was on the music staff, Royal Opera Covent Garden, 1914, and from 1918 conducted at Royal Philharmonic Society, Liverpool Philharmonic Society, London Symphony Orchestra, and Queen's Hall Orchestra. Was on teaching staff at Royal College of Music, London, 1919. Conductor of the Birmingham City Orchestra and the Birmingham Festival Choral Society, 1924-30; and 1930-42 was director of music at the B.B.C., remaining with the corporation after 1942 as the chief conductor of the B.B.C. Symphony Orchestra. Has done fine work, especially for the younger Eng. school of composers. Knighted, 1937. Pub. *A Handbook on the Technique of Conducting*, 1937.

Boulton, Matthew (1728-1809), Eng. engineer, b. at Birmingham. He succeeded (1759) to his father's business of silver stamper and piercer. So great were his improvements and extensions that in 1762 he removed his works to Soho, just N. of Birmingham. A new method of inlaying steel was one of his first achievements. He formed a partnership with the great James Watt (1775). They joined in improving coining machinery, and produced a new copper coinage for Great Britain in 1797. That same year a patent was granted B. for his method of raising water by impulse. Consult S. Smiles, *Lives of Boulton and Watt*, 1865; H. W. Dickinson, *Matthew Boulton*, 1936.

Boundary (O. Fr. *bodene*, *bonde*, medical. Lat. *bodena*, from *butina*, frontier line), that which marks the limit of land. The B. may be indicated by a post, ditch, hedge, march of stones, road, or riv., or it may be indicated by reference to a plan, or to possession of tenants, or by actual measurement. When two properties are divided by a road or riv., the middle line of the road or riv. is regarded as the B. between the owners (*usque ad medium filit*; whereas a hedge or fence is taken to belong equally to the adjoining owners. The Bs. of tns. and pars. depend upon anct. charter or custom. The Local Government Acts of 1888 and 1894 provided for the local readjustment of local areas, subject in certain cases to the confirmation of parliament. The Reform Acts of 1832, 1867, and 1884 defined political Bs., which frequently differ from municipal ones. In law, the exact B., whether public or private, is a matter of evidence, and where there is no evidence, the court acts on presumption. The presiding authority of a local board in England, or of a police bor. in Scotland, finally defines the B., which is then publicly recorded. In Scotland, a bounding charter describes the limits of land.

Boundary Layer (in aerodynamics), conception expressing the fact now amply confirmed by experiment that in real fluids of small viscosity the effects of viscous forces are concentrated in a thin layer adjacent to walls or immersed bodies constituting the boundaries of the space

in which the flow takes place. Physically the existence of the B. L. is caused by the property of fluids (gaseous or liquid) which makes slippage along solid boundaries impossible. The concept of the B. L. has enabled analytical treatment of the phenomena of flow of real fluids, and led to advances in the practical application of the science of aerodynamics. The main technical advances based on the theory of the B. L. are the development of low drag bodies, the attainment of high lift in the wings, and improvements in utilisation of fluid flow. Spectacular applications were the Flettner rotor successfully adapted for ship propulsion, the slotted wing for aircraft, and more recently the laminar flow wing. All applications are based on measures to prevent separation of the B. L. from the wall and for reduction of turbulence in the B. L. The former can be accomplished by (a) moving surfaces; (b) suction at certain points of the surface; (c) blowing away of the B. L.—the last-named by suitable shape of walls exposed to fluid flow.

Bounds, Beating the, see BEATING.

Bounty, in political economy, a sum granted directly or indirectly by a gov. to producers, manufacturers, etc., for the purpose of encouraging the particular industry, usually taking the form of a subsidy on quantities of goods exported from the country. Bs., or subsidies as they are also termed, were used much in Great Britain under the former mercantile system, examples being those on the herring fisheries, which, it is said, cost the state more than the price of the herrings as sold in the open market; the linen export Bs., abolished in 1834; and the corn export Bs. abolished in 1814. Foreign countries, which frankly adopt a protectionist standpoint, have, and still do grant, Bs. to stimulate industries which are of importance to the country apart from their commercial value, e.g. the Fr. shipping Bs., as a support for the navy; but, with one exception, the sugar Bs. (see BRUSSELS SUGAR CONVENTION), state trade subventions usually take more indirect methods, in the form of rebates, drawbacks, etc. From 1918 the Brit. Gov. gave a temporary B. to the growers of sugar-beet. From the point of view of economics, Bs. are objected to as penalising the consumer, the taxpayer, to benefit an individual trade; as withdrawing capital to an industry which without the B. would decline, and should therefore be regarded as doomed to extinction, and, as proved by past hist., have been in themselves unnecessary or even harmful, as in the case of the linen Bs. and herring fishery Bs. Apart from economic Bs., the word is applied to the money premiums formerly paid on enlistment for the army and navy in Great Britain and Ireland, which varied in amount during the great Napoleonic wars from £18 to over £20 a head. In the old militia forces Bs. of £2 were paid on enlistment. Bs., or 'B. money,' are paid to a mercantile ship's crew for salvage service, and payments were made to the crew per head

for slaves taken by a Brit. ship from a slaver. Special forms may be mentioned, e.g. the king's B., a donation of £3 granted by the sovereign to the mother of triplets.

Bounty, Queen Anne's, an eccles. fund, founded in 1703, when the tithes, etc., originally paid to the pope, and later to the crown, were reserved for this bounty. Its purposes are to augment small livings, to build parsonage houses, and generally to make grants for eccles. purposes. The administration of the fund has now been transferred to the Eccles. Commissioners.

Bounty Islands, small uninhabited is. included in the boundaries of New Zealand. They lie to the S.E. of S. Is. at about 48° S. and 180° W.

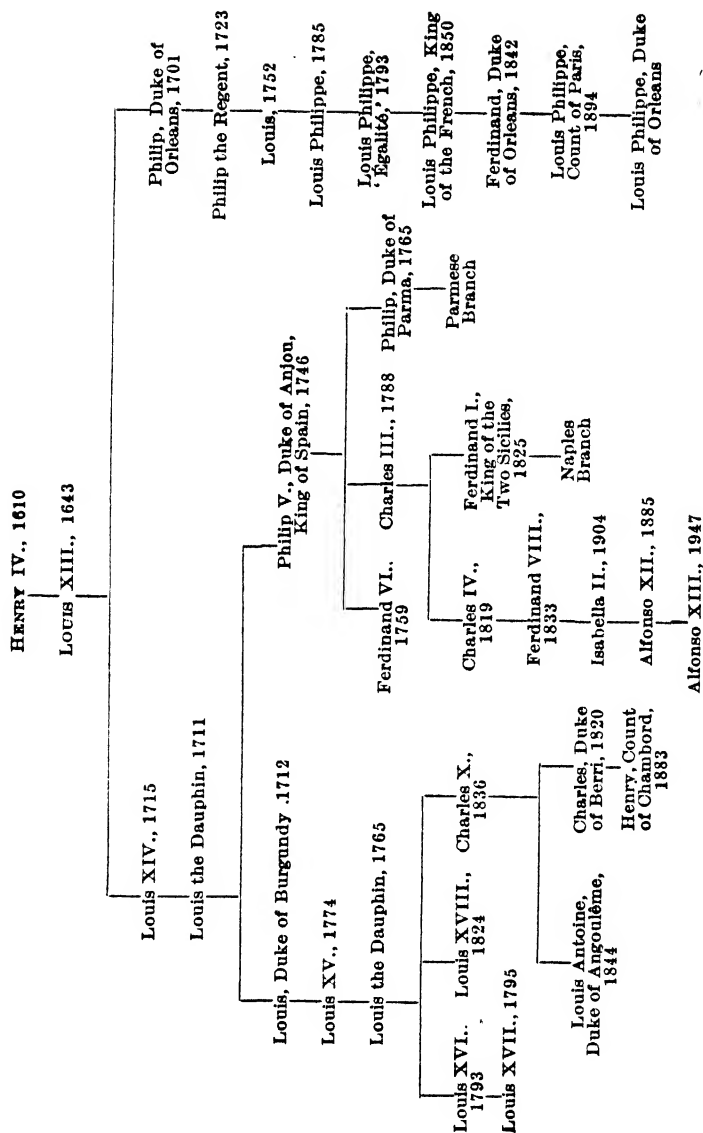
Bounty, Mutiny of the. H.M.S. *Bounty* was an Eng. vessel sent out in 1787 to Tahiti, under William Bligh (q.v.), to collect plants of the bread fruit tree for the W. Indian colonies. On the return Bligh's crew mutinied under his harsh treatment, turning him and the few who were loyal to him adrift. They finally reached land in safety. Of the mutineers some returned to Tahiti and were captured and punished; the rest settled on Pitcairn Is. (between S. America and Australia) in 1790. There were quarrels with the native Tahitians, and massacres took place, in which most of the Englishmen were murdered as time went on. Gradually, however, a little colony was formed under the surviving Englishman, John Adams, who d. 1829. Lord Byron used this incident in *The Island*. See Wm. Bligh, *Voyage to the South Sea in the 'Bounty', the Mutiny, and Voyage to Timor*, 1792; Sir John Barrow, *The Eventful History of the Mutiny of H.M.S. 'Bounty'*, 1831; H. V. Evans, *Rum Rebellion: Overthrow of Governor Bligh*, 1938.

Bourassa, Henri, Canadian journalist and parliamentarian, b. in Montreal, Sept. 1, 1868; son of the Canadian author, artist, and architect, Napoléon B. (1827-1916). Educated privately in Montreal. Called to the Bar, 1889, owned and ed. the Montebello paper *L'Interprète*. Elected 1896 to Dominion House of Commons, as a Liberal, resigned in 1899, as a protest against Canadian participation in Boer war and was triumphantly re-elected as a 'Nationalist.' In 1907 he left the Dominion Parliament to enter the Quebec Legislature, of which he was member 1908-12. In 1910 estab. *Le Deroir*. Opposed conscription during the First World War. In 1925, re-entered Dominion House of Commons.

Bourbaki, Charles Denis Sauter (1816-1897), Fr. gen., b. at Pau, educated at Saint-Cyr; entered the army in 1836, and served in Algeria, the Crimea, and Italy, distinguishing himself particularly at Alma and Inkerman (1854), and at Solferino (1859). In the Franco-Ger. War, he commanded the Imperial Guard and took a prominent part in the fighting round Metz, after which he was sent on a secret mission to the Empress Eugénie in England. For a short time he was at the head of the army of the N. He met with a severe repulse at Belfort (1871), and on his retreat attempted suicide.

He became corps-commander at Lyons in the same year, and retired in 1881. Consult Grandin, *Le Général Bourbaki*, Paris, 1897.

Bourbon, Fr. family which for 3 centuries occupied the throne of France, and has given monarchs to Naples and to Spain. The family seem to have taken their name from, and trace their descent back to, the early part of the tenth century. The name B. is taken from the territorial possessions of one Adhémar, lord of the barony of Bourbonnais, a ter. lying away in the centre of France and represented by the modern dept. of Allier. Adhémar seems to have been able to trace his descent from Charles Martel, the great Carolingian. The family of B. early in its hist. became allied by marriage to the house of Dampierre, and in 1272 it became allied by marriage to the royal Capetian house, by the marriage of Agnès, heiress of the house of B., with the sixth son of Louis IX. The son of this marriage received the title of the duke of B., but before the end of the fifteenth century this line had become extinct, and the duchy had passed into the possession of another branch of the family. With the great constable, Charles de B., the direct line from the first B. duke came to an end. A younger branch of the line took up the title in the person of Louis, duke of Vendôme, and in direct descent from him was Antoine, king of Navarre by marriage, and heir to the B. title and name. His son was the famous Henry of Navarre who in 1589 became king of France as Henry IV. Henry IV. was assassinated in 1610, and was succeeded by his son, Louis XIII., who d. in 1643, and was succeeded by his son, the 'grand monarque,' Louis XIV. He was succeeded by his great-grandson Louis XV., but before his death had succeeded in establishing the B. dynasty upon the throne of Spain. Louis XV. d. in 1774, and was succeeded by his grandson, Louis XVI., who met death on the scaffold during the Revolution in the year 1793. His son was nominally Louis XVII., and after the Napoleonic wars his brother was restored to the throne of France as Louis XVIII. He was succeeded by his brother, Charles X. Charles X.'s grandson was styled the count of Chambord, and on his death in 1883 the supporters of the B. family in France accepted as the head of the house of B. the Orleanist, Louis Philippe, count of Paris. He d. in 1894, and his position was taken up by his son. Before this date, however, the Orleanist branch of the B. family had placed one of their number on the throne of France. The Orleanists were descended from the brother of Louis XIV. Amongst the more prominent members of that section of the family may be mentioned, Louis Philippe, 'Egalité,' whose son became king of the Fr. for a short time in the nineteenth century. The 2 other important branches of the family are the Sp. and the Neapolitan. The Sp. dynasty was founded practically by Louis XIV., whose scheme for a union between the 2 countries failed,



THE FAMILY OF BOURBON

but who succeeded in placing his grandson, Philip of Anjou, on the throne in the place of the dead Charles II. From this sprang the alliances between France and Spain known as the Family Compacts, which influenced for some considerable time the politics of Europe. Philip of Anjou became King Philip V. of Spain, he was succeeded by his son, Ferdinand VI., and he in turn was succeeded by his brother, Charles III. He was succeeded in 1788 by his son, Charles IV., whilst his second son became king of the Two Sicilies. Charles IV. was deposed by Napoleon, this deposition being one of the chief causes of the Peninsular war, but after the war the throne was restored to the son of Charles IV. in the person of Ferdinand VII. In 1833 he was succeeded by his daughter Isabella, and his brother Carlos, duke of Madrid, claimed the throne by right of Salic law, and started the series of risings which have, on and off, taken place in Spain since. Isabella abdicated in 1870, and was succeeded by her son, Alfonso XII., who d. in 1885, and was succeeded by his posthumous son, Alfonso XIII. The first of the B. family to have the sovereign rights of the kingdom of Naples was Charles III., who on his succession to the Sp. throne passed these rights on to his second son, Ferdinand I. Ferdinand, at one time deposed by Napoleon, afterwards regained his kingdom and took the title of king of the Two Sicilies. He was succeeded in 1825 by his son, Francis I., who held the same title as his father, and he in turn was succeeded by his son, Ferdinand II. Francis II., who succeeded him, was deprived of his possessions, which were incorporated in United Italy. Another branch of the family is the Parmese branch, which held the titles of dukes of Lucca and Parma. The duchy of Parma came into the B. family in 1748, when by the treaty of Aachen it was conferred on the youngest son of Philip V. of Spain. It was held by this branch of the family until 1860, when the duchies were annexed by Victor Emmanuel to the kingdom of Italy. Other branches of the B. family are the Vendôme branch, descended from a natural son of Henry IV., and the families of Condé, Conti, Montpensier.

Bourbon, Antoine de, Duke of Vendôme, see ANTOINE.

Bourbon, Charles de (1490-1527), Fr. noble, usually styled the constable de B., the second son of Gilbert, count of Montpensier. By marriage with the heiress of the B. estates, and by the death of his elder brother, he became the wealthiest and most powerful noble in France. His conduct at the battle of Marignano (1515) gained for him the title of constable of France, and he was also made the governor of Milan. But his wealth and his influence raised him up enemies at court, who, after the death of his wife, seem to have been led by the queen mother. The attacks upon him led to the sequestration of his estates by the king, and B. decided that he would throw his sword into the balance against Francis I. By arrangement with Charles V. and Henry VIII., he agreed to

help these monarchs against France, and although Francis I. interviewed him personally he still so distrusted him that he refused to rejoin him, and fled to Italy. There he took part in the campaign against France, helping to drive the Fr. out of Italy, but failing in the action before Marseilles. He also took part in the battle of Pavia (1525). The promise made to him by Charles V., who seems to have distrusted him, was broken, but in 1526 he was given the duchy of Milan. In 1527 his troops, composed of Spaniards and Ger. Protestant mercenaries, clamouring for their arrears of pay, were led against Rome. Rome was attacked and stormed, and in the storming of the walls Charles de B. was shot by Benvenuto Cellini; at least, he says so in his *Life*. After the death of B. Rome was sacked by his starving and mutinous troops.

Bourbon, Henry I. and II. of, see CONDÉ, PRINCE DE.

Bourbon, Louis I. de, and II. and Louis Joseph, see CONDÉ, PRINCE DE.

Bourbon, Louis Antoine de, see ANGOULÊME, DUKE OF.

Bourbon, Ile de, see RÉUNION.

Bourbon-Lancy, tn. in the dept. Saône-et-Loire, France, noted for mineral springs dating from Rom. times. Pop. 4500.

Bourbon l'Archambault, tn. of France, in the dept. of Allier, cap. of the seigniory of B., from the lords of which sprang the royal family. Noted for mineral springs. Pop. 2700.

Bourbonnais, former prov. of central France, now corresponding mainly to the depts. Allier, Cher, and Nièvre. It formed the duchy of Bourbon from 1327 to 1523, when it was united to the Crown. In 1661 it was given to the house of Bourbon-Condé, who held it till the Revolution. Its cap. was Moulins.

Bourbonne-Bains, health resort in the dept. of Haute-Marne, France, 20 m. E.N.E. of Langres. Its thermal springs (140-150° F.) were known to the Romans under the name Aquæ Borvoniæ. The fine church dates from the twelfth century, and there are ruins of the château of the seigneurs de Bourbonne. Pop. 3000.

Bourbon-Vendée, see ROCHE-SUR-YON, LA.

Bourchier, Arthur (1864-1927), Eng. actor-manager, b. in Berkshire. He was educated at Eton and Oxford, where he founded the O.U.A.D.C. His first professional appearance was with Mrs. Langtry in 1889, as 'the melancholy Jacques' in *As You Like It*. Other of his Shakespeare characters were Shylock, Henry VIII., Macbeth, Macduff, Sir Toby Belch, and Falstaff. He toured with Daly's company in America, returning to England in 1893, and married the actress, Miss Violet Vanbrugh, in 1894. He acted with Sir Charles Wyndham as Joseph Surface in *The School for Scandal*. For a time he was Sir C. Wyndham's partner at the Criterion, appearing with him in *David Garrick*. In later years he was manager of the Garrick Theatre and of the Strand Theatre.

Bourchier, John, see BERNERS, JOHN.

Bourchier, Thomas (c. 1404-86), Eng. archbishop, educated at Oxford. He became bishop of Worcester in 1434; bishop of Ely, 1443; and in 1454 was made archbishop of Canterbury. He afterwards became a cardinal and lord chancellor of England; holding the latter appointment from 1454 to 1456.

Bourdaloue, Louis (1632-1704), Fr. divine, b. at Bourges, Aug. 20. He entered the society of Jesus when 16, and was later appointed prof. of rhetoric, philosophy, and moral theology in various Jesuit colleges. He began preaching 1666, and had an immediate success. In 1669 he was recalled from the prov. to preach in Paris, where his eloquence soon caused him to be ranked with the great men of the period. His sermons at Versailles were so much appreciated that he was asked to deliver Advent and Lenten sermons on at least 7 other occasions, whereas usually the same preacher never came more than 3 times to court. When the Edict of Nantes was revoked he went to Languedoc to confirm the new Catholic converts, and performed this mission tactfully. Towards the close of his life he devoted himself to charitable institutions, where his discourses were welcomed. Voltaire thought his sermons surpassed Bossuet's; they were remarkable for their severe but simple morality, devoid of over-elaboration. B. was a far greater orator than writer, and preached morality rather than dogma. Père Bretonneau's ed. of his sermons is reliable. For his life see Anatole Feugère, *Bourdaloue, sa prédication et son temps* (Paris), 1874, or Sainte-Beuve, *Causeries du Lundi*.

Bourdeaux, see BORDEAUX.

Bourdelle, Emile Antoine (1861-1929), Fr. sculptor, trained at Toulouse and Paris. Strongly influenced by Falguière and Rodin. First notable work was 'Adam après la faute,' exhibited in 1883. In 1912 he was given the work of decorating the Théâtre des Champs-Élysées, and he also designed the State factory of Gobelin tapestries. His most important monuments include 'The Virgin of Alsace,' 'The Epic of Poland,' 'Rodin travaillant à la porte de l'enfer,' besides busts of Sir James Frazer in the Royal Academy and of Beethoven in the Luxembourg museum.

Bourdon, Sébastien (1616-71), Fr. painter, b. at Montpellier. He studied at Paris and Rome, and returning to Paris, became one of the founders and later rector of the Royal Academy of Painting. In 1652 he was appointed court painter in Sweden. While known for his historical paintings, his other work also has merit. His masterpiece is the 'Martyrdom of Saint Peter,' in the Louvre, where sev. of his works are hung.

Bourdon de l'Oise, François Louis, Fr. revolutionist, b. in the middle of the eighteenth century at Saint-Remy, near Compiègne. He took part in the storming of the Tuilleries (1792), and obtained a seat by deception in the Convention. He was instrumental in the execution of Louis XVI., the insurrection of May 31, and the destruction of the Girondists.

He sided with the Moderates, and helped in the overthrow of the Terrorists (1794). He became a member of the Council of Five Hundred. His Royalist leanings brought him under suspicion, and in 1797 the Directory transported him to Cayenne, where he d. soon after.

Bourganeuf, tn. in France, cap. of an arron. in dept. of Creuse. Castle famous for sheltering the Turkish Prince Zizim, son of Mahomet II. Pop. 3300.

Bourgault-Ducoudray, Louis Albert (1840-1910), Fr. musical composer, b. at Nantes. Studied under Ambroise Thomas in Paris, obtaining Prix de Rome in 1862. In 1869 he founded, in Paris, a society for the production of choral and orchestral works, anc. and modern. Went to Greece, in an official capacity, to study Gk. church and folk music, a mission of research which opened new vistas in musical science and art. In 1878 he was appointed prof. of musical hist. at the Paris Conservatoire, holding the post for 30 years, and exercising wide influence by his teaching, notably in popularising Russian music in France and, later, in other countries. His chief works are *Rhapsodie cambodgienne* (1882) and *Le Carnaval d'Athènes* (1884) (orchestral works); *Myrddin* (1905) and *Thamara* (1891), (operas). His other works include *Michel Colomb* (1877) and *Bretagne* (1888), unpub. operas; *Trente Mélodies populaires de la Grèce et de l'Orient* (1875), *Trente Mélodies de la Basse Bretagne* (1883), *Mélodies du Pays de Galles et d'Ecosse* (1908)—all collections of folk-songs which are classics of their kind. A composer of originality, his best works are appreciated by music lovers who know them.

Bourgat, Claude (1712-79), Fr. veterinary surgeon, at first a barrister and then a musketeer, founded in 1761 a veterinary school at Lyons, the first of its kind in Europe. He was director also of the second, estab. in 1765 at Alfort. He made a study of the anatomy of domestic animals, and raised an art that had been empirical to the rank of a science.

Bourg-en-Bresse, cap. of the dept. of Ain, France, on the Reyssouze, 38 m. N.E. of Lyons. The tn. contains the church of Brou (1511-36), founded by Margaret of Austria, with her tomb and that of her husband, Philip II., duke of Savoy, and her mother-in-law, Margaret of Bourbon. The Gothic church of Notre-Dame dates back to 1505, and has a Renaissance porch. There are manufs. of enamelled jewels, and there is considerable trade in horses, cattle, poultry, and grain. Pop. 21,000.

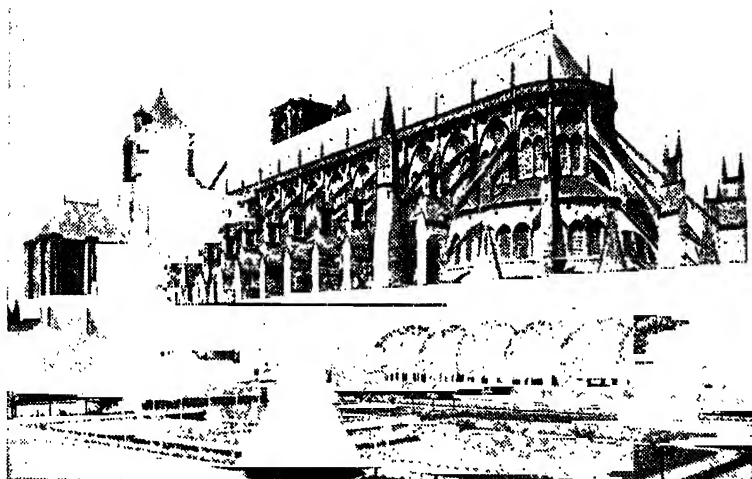
Bourgeois, Sir Francis (1756-1811), Eng. painter, son of a Swiss clockmaker. He became R.A. in 1793, and is famous for his bequest of a valuable collection of pictures to Dulwich College, and a large sum of money for the upkeep and extension of the galleries. Two noted works are 'Kemble as Coriolanus' and 'Hunting a Tiger.'

Bourgeois, Léon Victor Auguste (1851-1925), Fr. statesman, b. in Paris; educated

for the law. He was made prefect of police in 1887, and began his political career the following year when he defeated Boulanger by a great majority and entered the Chamber as a Radical deputy for Marne. He was under-secretary for home affairs in 1888, minister of the interior in 1889, and minister of public instruction in 1890. In 1895 he himself formed a Cabinet, which fell because the Senate refused to vote any supplies, and an appeal to the people bore out its action. He was minister of public instruction in 1898, and in 1903 represented France at

tion with the representatives of other powers in drawing up the various Hague Conventions, marked him out as essentially the man to represent France on the League of Nations. See Maurice Ham-burger, *Léon Bourgeois* (biography from Radical-Socialist point of view), 1932.

Bourgeoisie, a Fr. word, applied to the middle-class citizens of a tn. as separate from the nobility and the working classes. The term is often used contemptuously, implying smug respectability. The Fr. bourgeoisie have long been opposed to the aristocratic party, but have themselves



E.N.A.

THE CATHEDRAL OF ST. ÉTIENNE, BOURGES

The Hague Peace Congress. He became a senator in 1905, and minister for foreign affairs in 1906. His services were frequently invoked in arbitration or agreements between France and other states, and in interparty compromises. He was Prime Minister again in 1905, during a political crisis following upon the attempted assassination of President Loubet, and it is probable that no other man could then have successfully formed a ministry. In 1918 the Fr. Gov. appointed him chairman of a foreign office committee on the League of Nations. He was chairman of the drafting committee in 1919, and in that capacity had a great deal to do with the form in which the League scheme was finally presented to the allied nations. He was one of the Fr. delegates on the Inter-Allied Peace Conference to Paris, 1919. His outstanding qualities were a power of conciliation and a skill in the art of managing men, and these, added to his many years of service in collabora-

tion with the representatives of other powers in drawing up the various Hague Conventions, marked him out as essentially the man to represent France on the League of Nations. See Maurice Ham-burger, *Léon Bourgeois* (biography from Radical-Socialist point of view), 1932.

Bourges, anc. cap. of Berry, now of the dept. of Cher, France, 144 m. S. of Paris on the canal du Berry, situated at the junction of the Yèvre and Auron. It is the seat of an archbishopric, and contains a large military arsenal. The cathedral of St. Étienne, which was begun in the thirteenth century, is one of the finest churches in Europe. Other notable buildings are the Palais de Justice, formerly the house of Jacques Cœur, Charles VII.'s banished silversmith, and now a museum; and the churches of Notre-Dame, St. Pierre, and St. Bonnet. B. was the cap. of the Gallic Bituriges Cubi, and was sacked by Julius Cæsar in 52 B.C., its name at that time being Avaricum. For a time, under Charles VII., it was the cap. of France. Its univ., which was frequented by Beza, Calvin, and Amyot, was abolished at the Revolution. The tn. has iron

foundries, cloth and cutlery factories, tan-yards, and breweries, and there is extensive trade in wine, grain, hemp, cattle. The aircraft factories were heavily bombed by the R.A.F. on Apr. 10, 1944. Pop. 45,000.

Bourget, Lake, a lake near Aix-les-Bains, France. It is 11 m. long and about 2 m. broad.

Bourget, Le, tn. in the dept. of the Seine, France. It is the centre of military and civil aviation 5 m. from Paris. Air-port for the international lines. The Fr. were defeated here on Oct. 28-29 and Dec. 21, 1870. Pop. 6500.

Bourget, Paul Charles Joseph (1852-1935), Fr. novelist and critic. He was b. at Amiens in 1852, and studied at the *lycée* at Clermont-Ferrand, and the college of Sainte-Barbe, Paris, where he graduated brilliantly in 1872. Three vols. of verse—*La Vie inquiète*, 1875; *Edel*, 1878; and *Les Aveux*, 1881—were among his earliest contributions to literature. His critical studies, *Essais* and *Essais de psychologie contemporaine*, pub. in 1883 and 1886 respectively, are singularly subtle in analysis. His first novel, *L'Irréparable*, 1884, was quickly followed by others, *Cruelle Enigme*, 1885; *Un Crime d'amour*, 1886; *André Cornélis*, 1887; and *Mensonges*, 1887, which placed him in the front rank of modern novelists. They show an extraordinary insight into 'states of soul' and the morbid, cynical interest of a dilettante in psychological situations. He travelled widely and was a cosmopolitan by instinct (his father was a Russian, his mother an Englishwoman)—facts which account for his intimate knowledge of mixed society of all nationalities. He pub. impressions of his travels in *Outre-Mer*, 1895; and *Études et portraits*, 1888. Other publications include: *Le Disciple*, 1889; *Nouveaux Pastels*, 1890; *Sensations d'Italie*, 1891; *Psychologie de l'amour moderne*, 1891; *Un Scrupule*, 1893; *Un Saint*, 1894; *Une Idylle tragique*, 1896; *Recommencements*, 1897; *Complications sentimentales*, 1898; *Le Fantôme*, 1901; *Montique*, 1902; *L'Étape*, 1902; *Un Divorce*, 1904; *Les Deux Sœurs*, 1905; *L'Émigré*, 1907; *Le Tribunal*, 1911; *La Crise*, 1912; *Le Démon de midi*, 1914; *Le Sens de la mort*, 1915; *Lazarine*, 1917; *Némésis*, 1918; *Le Justicier*, 1918; *Anomalies*, 1919; *Laurence Albane*, 1920; *Un Drame dans le monde*, 1921; *Nouvelles Pages de critique et de doctrine*, 1922; *Conflicts intimes*, 1925; *Le Danseur mondaine*, 1926; *Nos actes nous suivent*, 1927. A collected ed. of his works has been pub., and most have been trans. into Eng. He became a member of the Fr. Academy in 1894. Consult Dounio, *Écrivains d'aujourd'hui*, Paris, 1894; and lives by Giraud, 1934, and A. Feullerat, 1937.

Bourgoigne, see BURGUNDY.

Bourgoin, on the Bourbre, in the dept. of Isère, France, 7 m. W. of La Tour-du-Pin. Pop. 6100.

Bourg-Saint-Andéol, tn. in the dept. Ardèche, France, situated on the r. b. of the Rhône. Romanesque church; Rom. remains near. Pop. 4500.

Bourg-sur-Gironde, a Fr. tn. in Gironde, near R. Dordogne, with remains of ant. fortifications and Rom. walls. Pop. 1500.

Bourguignon, Le, see COURTOIR, JACQUES.

Bourignon, Antoinette (1616-80), Flemish mystic, b. at Lille. She was a religious enthusiast from her earliest years, being subject to strange hallucinations and visions. She strove for reform, and the restoration of the original purity of the Gospel spirit. Her doctrines won for her numerous disciples and as many foes. She was banished from her country, and travelled in Belgium, Holland, and N. Germany. She also visited France, England, and Scotland, and preached reform. Her followers soon dwindled away after her death, but her influence was felt again in Scotland in the eighteenth century, and was denounced by the Presbyterian general assemblies of 1701, 1709, 1710. Her writings were pub. by Pierre Poiret, her disciple, at Amsterdam, 1679-84. The following works have been trans. into Eng.: *An Abridgement of the Light of the World*, A Treatise of Solid Virtue, and *The Restoration of the Gospel Spirit*.

Bourinot, Sir John George (1837-1902), Canadian historian, became clerk to the Canadian House of Commons in 1880. His works cover the whole field of Canadian hist. The best known of his works is *Parliamentary Procedure and Practice in Canada* (1884), which is a standard work on the subject. His other works include: *Canada*, 1885, in the Story of the Nations series; *Builders of Nova Scotia, Canada, under British Rule; Constitutional History of Canada*, etc.

Bourke, tn. in New S. Wales, Australia, situated on the Darling R., 500 m. by rail from Sydney. The dist. is noted for copper ore. Pop. 4000.

Bourke, Richard Southwell, sixth Earl of Mayo (1822-72), Brit. statesman, b. at Dublin, and educated there. Appointed viceroy of India, 1869, B. reorganised the finances of the country and promoted many useful public works. He helped to preserve the autonomy of Afghanistan. He was assassinated by a convict at Port Blair, Andaman Is. See *Hunter's Life*, 1876; *The Earl of Mayo in Rulers of India* series, 1891.

Bourlon Wood, small wood W. of Cambrai in N. France; the scene of fighting in Nov. 1917 during the First World War. The strategic importance of B. W. was that it was situated on the W. end of the Bourlon Ridge, which dominated the theatre of operations for many miles and, in particular, was the key to the operations against the Quéant Salient, held by the Gers, a few miles further W. In fact the capture of the wood and ridge was planned with a view to facilitating the operations against the Quéant Salient. (See DROCOURT-QUÉANT.) Owing to allied activity in Flanders, the Gers. had been gradually weakening various parts of the W. front to reinforce their line towards its N. extremity, and in Italy. Cambrai was one of the points so weakened, and it was therefore decided to make an

advance in this sector. Hitherto it had been the practice for both sides to announce their intention of attacking a certain locality by a long preliminary bombardment. In this case it was decided to dispense entirely with bombardment, and to rely on numerous tanks. The task was not an easy one, notwithstanding the element of surprise, for the Gers. persistently counter-attacked, causing some positions to change hands several times. The Gers. fully appreciated the importance of B. W. as a key position and eventually brought up overwhelming odds against the Brit., who were compelled to evacuate it on Dec. 4, 1917, and withdraw to a more defensible line. This withdrawal caused much disappointment, and the whole operation has been much criticised.

Bourmont, Louis Auguste Victor de Ghaisnes, Comte de (1773-1846), Fr. marshal, b. at Château de Bourmont, in the dept. of Maine-et-Loire. He fought on the side of the Royalists under Condé; he went into exile from 1793 to 1799, and took an active part in the struggle in La Vendée. He was imprisoned on a charge of intrigue at Besançon, but escaped to Portugal. Later he won the favour of Napoleon, and for his services in Naples, Russia, and Germany (1808-14) was promoted to the rank of general. He vacillated between Louis XVIII. and Napoleon, deserting the latter before the battle of Ligny. In 1829 he was appointed minister of war, and in the following year took command of the expedition to Algeria, in which he was successful. He refused to take the oath of allegiance to Louis Philippe, and was deprived of his peerage and his command in the army. He served Dom Miguel, king of Portugal, for a time, and d. at his castle at Bourmont.

Bourne, market tn. in the Stamford parl. div. of Lincolnshire, 95 m. N. by W. of London. It has an Early Eng. church which belonged to a foundation of Augustinian canons of 1138. It has an agric. trade; it is also famous as having been the stronghold of 'Hereward the Wake.' Pop. 5000.

Bourne, Edward Gaylord (1860-1908), Amer. historian, b. at Strykersville, New York. Author of *The History of the Surplus Revenue of 1883, 1885; Essays in Historical Criticism*, 1901; *Spain in America*, 1904; *Life of J. L. Molloy*, 1905. He also trans. *The Narrative of De Soto*, 1904, and *The Voyages of Champlain*, 1905.

Bourne, Francis, Cardinal (1861-1935), b. at Clapham, Mar. 23; educated at St. Outhbert's College, Ushaw, St. Edmund's, Ware, Saint-Sulpice, Paris, and the univ. of Louvain. Ordained priest 1884; served as curate at Blackheath, Mortlake, and W. Grinstead, in succession. He was the founder in 1889, and the first head, of a theological seminary in the diocese of Southwark, of which he was made bishop in 1897. He had previously, in 1895, received the appointment of domestic chaplain to the pope. When Cardinal Vaughan d. in 1903 he succeeded

him as Rom. Catholic archbishop of Westminster. He then became head of the Eng. Rom. Catholic Church. From a national point of view, the most striking event of his career as archbishop was in connection with the Eucharistic Congress of 1908. The Host was to have been carried through streets in Westminster on Sunday, Sept. 13, but representations made by the Gov. that this would be illegal prevented it at the last moment. Created cardinal 1911.

Bourne, Hugh (1772-1852), founder of the sect of Primitive Methodists. He was b. at Fordhays in Staffordshire, and began life as a carpenter. He became a Wesleyan Methodist local preacher, but his zeal for open-air meetings did not meet with the approval of that body, and his repeated defiance of the resolutions of the Wesleyan Methodist Conference resulted in his expulsion from the society in 1808. His evangelical style of preaching was popular, and he gathered round him many followers, through whom he estab. a new denomination, which adopted the name of Primitive Methodists in 1812. B.'s first chapel was founded at Tunstall in 1811, and the first ann. conference at Hull in 1820. He visited Scotland, Ireland, Canada, and the U.S.A., and before his death the members' roll numbered 110,000. He pub. the *History of the Primitive Methodists*, 1823. See J. Walford, *Memoirs*, 1855.

Bourne, Vincent (1695-1747), Eng. classical scholar and poet. Went from Westminster to Trinity College, Cambridge, finally becoming a master in his old school. Pub. Lat. poems of poetic as well as linguistic merit. Many are translations, and often surpass their originals. His pupil, Cowper, ranked him as high as Ovid. Lamb also has praised his Lat. verse. The best ed. of his *Poemata* has a memoir by John Mitford. **Bournemouth**, watering-place and winter resort on Poole Bay, off the coast of Hampshire, England, 25 m. S.W. of Southampton. It received its charter of incorporation in 1890, became a co. bor. in 1900, and a parl. bor. in 1918. Pop. 118,000. Its sheltered position in a pine valley, and its even temp., have made it a favourite winter resort for invalids. The sanatorium for consumptives was built in 1855, and there are numerous hospitals and convalescent and nursing homes. In the churchyard of St. Peter's are buried Godwin, Mary Wollstonecraft, and Mary Shelley. B. has a fine stretch of sands, parks, winter gardens, 2 piers, one 1000 ft. long, and golf courses. The Undercliff Drive has, since 1914, been extended until it now forms an unbroken promenade of 2 m. The Russell-Cotes Museum and Art Gallery is situated in B., which also has free libraries and two large boarding-schools for girls. During the season, steamers ply between B. and other centres on the mainland and the Isle of Wight. Yachting in Poole Harbour is popular among the visitors. Outside the tn. an aerodrome has been erected, which is available for civil aviation. The Pavilion, comprising theatre, dance halls, etc., was

opened in 1929. The area of B. until 1930 was 6643 ac.; but this was nearly doubled in that year by amalgamating with the bor., the pars. of Kinson and Holdenhurst and the open space known as Hengistbury Head (454 ac.). With these additions, the bor. area is 12,146 ac., and its coastline taken some 2 m. further eastward. The par. of Kinson is notable for an anct. church, about which clings the tradition of smuggling days. This is the sixth extension of B. in the past half-century or more, in which period B. has grown from an insignificant tn. to be one of the largest seaside resorts in the country. Town-planning schemes were successfully carried out in order to safeguard development under the extension, and the municipality is now (1946) considering a far-reaching plan devised by Sir Patrick Abercrombie to remodel the centre of the tn. and to develop the coastal area, embracing the bors. of B., Poole, and Christchurch, to make B. one of the most attractive watering-places in Europe. During the Second World War, the tn. suffered comparatively little. There were, however, some 50 air-raids, notably on Apr. 10-11, 1942, and May 23, 1943. In all, some 250 buildings were destroyed or damaged beyond repair, and the total casualty list numbered over 700.

Bournonite, copper lead antimony sulphide, CuPbSbS_3 . It is an opaque mineral, of a dull grey colour, with bright metallic lustre. It occurs in tabular, orthorhombic crystals, which sometimes form wheel-shaped, twinned growths; hence the miners' name 'cog-wheel ore'. It is first mentioned by Philip Rashleigh in 1797; later, in 1804, by the comte de Bournon, from whom it derived its name, though Bournon himself named it Endellion, after the place in Cornwall where it was first found. It is also to be found at Neudorf in the Harz, Germany, and a few other localities.

Bournville, estate in the neighbourhood of Birmingham. It was founded as a model vil. by George Cadbury (1839-1922), head of the firm of cocoa and chocolate manufacturers, and is now administered under the Bournville Village Trust as a garden city for employees of the firm.

Bourrée, dance of Fr. or Sp. origin, which was in vogue in France in the period of Louis XIV. It was very similar to the gavotte, but differed from it by its phases, beginning at the last quarter of the measure, not at the half-way. The dance called B., which is still popular in Auvergne and Anjou to the music of the musette or to that of the hurdy-gurdy, seems quite different. It is generally in 3-4 time, but occasionally written in 2-4. As a musical form Bs. are often found in the works of the older composers, such as Bach.

Bourrienne, Louis Antoine Fauvelet de (1769-1834), Fr. diplomatist; an early friend and secretary of Napoleon I. He was *b.* at Sens and became intimate with Napoleon at the military school at Brienne. He became secretary of the embassy at Stuttgart, 1792; secretary of

Napoleon, 1797, whom he accompanied to Italy and Egypt. He was appointed a councillor of state in 1801, but was dismissed from office in the following year on a charge of peculation. In 1805, however, he was sent as chargé d'affaires to Hamburg, but was recalled on account of his dishonest transactions, and was obliged to refund a million francs to the public treasury (1810). He then deserted Napoleon and supported the Bourbons, and sat in the Chamber of Representatives (1815). After the revolution of 1830, he went out of his mind and *d.* in a lunatic asylum at Caen. His *Mémoires sur Napoléon* (10 vols., Paris, 1829) are unreliable and spiteful.

Bourris, Marc Théodore (1735-1819), Swiss artist and naturalist, *b.* at Geneva. He made numerous excursions in the Alps, and devoted all his energies to their study. He was the first to make an attempt to climb Mont Blanc, which he did in 1784, but he did not succeed until 3 years later, after Balmat and Saussure had done so. His chief works are: *Description des glaciers du duché de Savoie*, 1774; *Description des aspects du Mont Blanc*, 1776; *Description des Alpes pennines et rhétiennes*, 1781; *Description des cols et passages des Alpes*, 1803.

Bourse, name applied on the Continent to a stock exchange, money market, or any place where merchants resort. The Royal Exchange of London was originally called Gresham's Bourse; it was built at his own expense by Sir Thomas Gresham (1566-67) on the model of one at Antwerp. The Paris B. was designed by Brongniart (1808) and was completed by Labarre (1827).

Bouseat, tn. in the dept. of Gironde, France, 2 m. N.W. of Bordeaux. It is practically a suburb of Bordeaux, and there are many country houses, a hydro-pathic establishment, and a coast wireless station. Pop. 15,000.

Boussa, Bussa, or Bussang, tn. in central Africa, on an is. in the Niger, Brit. Protectorate of N. Nigeria. It was the scene of Mungo Park's death in 1806. Pop. 12,000.

Boussac, tn. of France, cap. of an arron. in dept. of Creuse. Possesses a castle decorated with tapestries said to have adorned the Turkish Prince Zizim's apartments at Bourgneuf. Pop. 1200.

Boussingault, Jean Baptiste Joseph Dieudonné (1802-87), Fr. chemist. He studied at the School of Mines of Saint-Étienne; served under Gen. Bolívar in the S. Amer. war of independence; on his return to France became prof. of chem. at Lyons. In 1839 he became a member of the Institute and prof. of agriculture in the Conservatoire des Arts et Métiers, Paris. In 1876 he was made grand officer of the Legion of Honour. He won fame for his experimental investigations in agric. science. Pub. *Economie rurale*, 2 vols., 1844; new ed. in 3 vols., 1860-64 and 1887-91; trans. into Eng. and Ger.

Boussu, tn. in the prov. of Hainaut, Belgium, on the Haine, 7 m. W. of Mons. In the tn. and neighbourhood are coal

mines, smelting works, and copper and iron foundries. Two engagements between the Fr. and the Austrians took place here on Apr. 28, and Nov. 4, 1792. Pop. 12,000.

Boutell, Charles (1812-77), Brit. archaeologist, b. in Norfolk. He was rector of Downham Market, 1847-50; and vicar of St. Mary Magdalen, Wiggenshall, Norfolk, 1850-55. B. founded the London and Middlesex Archaeological Society, 1855. Among other works of the kind he wrote *Monumental Brasses and Slabs of the Middle Ages*, 1847; *A Manual of British Archaeology*, 1858; and *Heraldry, Historical and Popular*, 1863.

Bouterwek, Frederick (1765-1828), Ger. poet and philosopher. Began by writing novels and verses, then turned to literary hist. and philosophy, adopting ideas first of Kant and later of Jacobi. His chief works are: *Geschichte der neuern Poesie und Beredsamkeit*, 1801-19; *Aphorismen nach Kant's Lehre vorgelegt*, 1793; *Ideen zu einer allgemeinen Apodiktik*, 1799.

Bouts, Dierick (c. 1410-75), Dutch landscape and historical painter. Some uncertainty exists about his name, which occurs as Theodoricus (Lat.) or Thierry B.; often as Thierry de Haarlem, or Stuerbouts, though probably he has no connection with that family of painters. B. settled in Louvain (c. 1448), being appointed painter to the tn. council (c. 1468). Probably a pupil of Hubert van Eyck; his work shows some resemblance to that of Van der Weyden. In 1468 B. finished 2 large pictures for Louvain tn. hall. These (now in Brussels Gallery) illustrate a legend in Godfrey of Viterbo's chronicle praising the virtue of justice, as exemplified in a judgment of Otho III. They are striking and powerful works with life-size figures. In 1468-1472 he painted the 'Last Judgment.' Other works are 'Triptych of St. Erasmus's Martyrdom' in St. Peter's Church, Louvain; also 'Triptych of the Last Supper' (c. 1463). The shutters of this are now at Munich, the wings at Berlin. Many works formerly attributed to Memling are proved to be B.'s ('History of St. Ursula' at Bruges).

Bouts-rimés, a pastime in vogue among literary circles during the seventeenth and eighteenth centuries, particularly in France. One member of the party gives out certain rhyming words, and the rest of the players compose verses, using the given words as their rhyme endings. The amusement was ridiculed by Addison: see *Spectator*, No. 60.

Bouvet, François Joseph (1753-1832), Fr. admiral. He distinguished himself in service in the E. Indies in the time of Hyder Ali and, later, in the Napoleonic wars, he commanded a div. of ships at the battle of the First of June, 1794. In 1802 he was sent out to occupy Guadeloupe.

Bouvet Island, a small uninhabited is. in the S. Atlantic Ocean, chiefly used as a whaling station, the possession of which was the subject of dispute between Great Britain and Norway. The is. lies at S. lat. 52° 26' and E. long. 3° 24'. The

location of the is. was uncertain, there being another is. in the vicinity, located by a Ger. expedition in 1898, that was taken for the is. discovered by Lozier-Bouvet in 1739. The Norwegian claim was based on the acknowledged fact that an expedition of Norwegians had landed on (the original) B. I. in 1927. The Brit. Gov. waived its claim in Nov. 1928.

Bouvier, John (1787-1851), Amer. jurist, b. at Codogno, Italy; his family emigrated to Philadelphia, 1802; became an Amer. citizen, 1812; admitted to the Bar, 1818; recorder of Philadelphia, 1836; and 1838 till his death associate justice of the court of criminal sessions. He pub. a standard law dictionary and ed. *Bacon's Abridgment of the Law*.

Bouvines, or Bovines, vil. in the dept. of Nord, France, 6 m. S.E. of Lille. It is noted as the scene of the victory of Philip Augustus of France over Otho IV., emperor of Germany; John, king of England; and the count of Flanders, in 1214. Pop. 600.

Bouxwiller, or Buxwiller, tn. of the dept. Bas-Rhin, France. It has brick and tile and chemical works. Pop. 3000.

Bovate, or Oxbang, old Eng. land measure, being the extent of land an ox could plough in a year, which varied from 8 to 24 ac.; one-eighth of a carucate, the land ploughed by a team of 8 oxen.

Boves, tn. of Italy, situated at the foot of the Alps, about 4 m. from Cuneo. There are marble quarries and iron mines in the dist.

Bovey Tracey, vil. in Devonshire, England, 8½ m. W.N.W. of Teignmouth, with a railway station. The B. Beds are a deposit of sands, clays, and lignite, due to the degradation of the neighbouring Dartmoor granite. The layer is 200-300 ft. thick, and extends from B. T. to Newton Abbot. The latest investigations go to prove that the geological formation closely resembles that of the Bournemouth Beds or Lower Bagshot. The clay extracted is valuable, and used for pipe and potter's clay. The lignite or B. coal (worked since 1714) is sometimes burned in the local kilns but is not economical. Pop. 3000.

Bovidae, family of mammals included in the order Ungulata and of ruminant habit. The family consists of antelopes, sheep, goats, and oxen, with their different species and varieties, but the different sub-families are not sharply defined or easily separated from one another. They occur in all parts of the Old World, but are not native to Australia and S. America. They are artiodactylate (*i.e.* even-toed), and all the males have hollow horns; horns are frequently present, but sometimes absent, in the females. Their chief distinguishing features are their horns, limbs, stomach, and teeth. About 45 genera and 200 species exist, of which most are antelopes.

Bovill, Sir William (1814-73), Eng. judge, noted for his decisions in commercial cases. He became barrister 1841, and joined the home circuit. Q.C., 1855; M.P. for Guildford, 1857. The Partnership Law Amendment Act, which he

helped to pass, 1865, is called B.'s Act. B. was solicitor-general, 1866, and vacated office the same year to become chief justice of the common pleas.

Bovines, see BOUVINES.

Bovino, episcopal city in the prov. of Foggia, S. Italy, situated on the Apennines, 2100 ft. above the sea, and 18 m. S.W. of Foggia. It has an anct. cathedral. The trade is in wine and oil. Pop. 7000.

Bovista, genus of gasteromycetous fungi, or puffballs (*q.v.*), which differ only slightly from *Lycoperdon* (*q.v.*). Many species are found in America and a few in Britain; sev. are edible. *B. gigantea*, the bull puff-ball or frog's cheese, has the form of a flattened ball, and is at first perfectly white. Specimens have been gathered which measure 9 ft. in circumference.

Bow, of a ship, the forepart or stem, which cleaves the water as the vessel moves. A naval architect speaks of the 'U' or 'V' form Bs., referring to the shape of the section, whilst sailors describe various types as being broad or full, and lean or fine Bs. As 'starboard' and 'port' are used respectively of the right and left sides of the vessel, looking forward, it is possible to speak of the starboard and port Bs., which mean, of course, at the stem.

Bow (Fr. *archet*, Ger. *bogen*, It. *arco*), by means of which stringed instruments, as the violin, are made to give forth their tone. It is made of a thin staff of elastic wood tapering slightly to the lower end, from 29-134 to 29-528 in. in length. It is divided, as a whole, into 5 parts: the stick, the ferrule, the nut, the hair, and the head. The hairs, numbering from 110 to 200 of the best white horsehair, are fastened to the lower end, and their tension is regulated by the nut.

Bow, see ARCHERY.

Bow, dist. of London, 3 m. E. of St. Paul's, in the metropolitan bor. of Poplar, and the parl. bor. of Tower Hamlets (B. with Bromley returning 1 member). It has 3 railway stations.

Bow Church, or, in full, the Church of St. Mary-le-Bow or S. Maria de Arcubus, situated on the S. side of Cheapside, London. It was built by Sir Christopher Wren in 1670-80 on the site of an eleventh-century church which was burnt down in the Great Fire. The old 'Bow Bells' of London were also destroyed in the fire and were replaced by new ones in 1758. The church is notable for its well-proportioned spire, some 220 ft. in height, which is the finest of the spires built by Wren. The church suffered severely during the Ger. air attack on London in May 1941. The interior was gutted by fire, but the steeple still stands and the early Norman crypt was undamaged.

Bowden, small tn. of S. Australia, a suburb of Adelaide; pop. 5000.

Bowdich, Thomas Edward (1791-1824), Eng. traveller in Africa and scientific writer, b. at Bristol. He conducted a mission to Ashanti in 1815, and on his return pub. *A Mission from Cape Coast*

Castle to Ashanti, 1819, and the *African Committee*, 1819. He then studied mathematics and natural science in Paris for a time, and in 1822 set out on a second expedition, but d. of fever at Bathurst, Gambia. He wrote sev. works, of which mention may be made of a translation of Mollieu's *Travels to the Source of the Senegal and Gambia*, 1820; *Discoveries of the Portuguese in Angola and Mozambique*, 1824.

Bowditch, Nathaniel (1773-1838), Amer. mathematician and astronomer, b. at Salem, Massachusetts. From early youth showed a bent for mathematics, but was bred to his father's business as a cooper, and later apprenticed to a ship-chandler. Between 1795 and 1803 went on 5 long voyages to perfect himself in practical navigation. Translation of Laplace's *Mécanique céleste*, 1829-38, with annotations, is one of his chief works. To this (fourth ed.) his son's Life is prefixed, 1839. This was elaborated into a separate biography by another son, 1865. He also pub. *New American Practical Navigator*, and was offered professorships at various Amer. univs.

Bowdler, Thomas (1754-1825), editor of the *Family Shakespeare*, in 10 vols., in which 'those words and expressions are omitted which cannot with propriety be read aloud in a family,' 1818. He also ed. Gibbon's *History of the Decline and Fall of the Roman Empire* 'with the careful omissions of all passages of an irreligious or immoral tendency.' His prudery was much ridiculed, and gave rise to the word 'bowdlerism.'

Bowdoin College, estab. for the higher education of men, founded at Brunswick, Maine, in 1794, in honour of James Bowdoin (*q.v.*). Bowdoin's son gave large grants of land, money, etc., to B. C., which has a faculty of over 50 members for some 600 seniors, juniors, and freshmen. A library of over 140,000 vols. In 1928 a Union building and a swimming-pool were added to the college.

Bowdoin, James (1726-90), Amer. statesman, graduated at Harvard in 1745. During his governorship of Massachusetts (1785-86), he suppressed the insurrection known as Shay's rebellion. In a letter to Benjamin Franklin he suggested that the phosphorescence of the sea was due to animalcules. It was in recognition of his scientific research that Bowdoin College, Brunswick, Maine, was named after him.

Bowel, one of the divs. of the alimentary canal below the stomach. It consists of the small intestine, which is divided into the duodenum, jejunum, and ileum; and the large, which is divided into the caecum, colon, and rectum. See further under **INTESTINES**.

Bowell, Sir Mackenzie (1823-1917), Canadian politician, son of a carpenter, b. at Rickingham, Suffolk, Dec. 27. His parents emigrated in 1833 to Belleville, Canada; here he became a journalist and newspaper proprietor. In 1867 he entered the Canadian parliament as member for N. Hastings; after holding this seat for 25 years he passed to the Senate. As

a Conservative and leader of the Orangemen he took a prominent part in politics; being successively minister of customs, militia, and commerce, and from Dec. 1894 to April 1896 Premier. His party being defeated on the education question, he led the opposition from 1896 to 1906. In 1895 he was made K.C.M.G. D. at Belleville, Ontario, Dec. 11.

Bowen, Charles Synge Christopher, Lord (1835-94), Eng. lawyer and judge, b. in Gloucestershire. A great classical scholar, he became fellow of Balliol, 1858, and was called to the Bar at Lincoln's Inn, 1861. He appeared in the famous Tichborne case, 1872. He was raised to the Court of Appeal, 1882; became lord of appeal in ordinary, 1893. His last public service was presiding over the commission for inquiring into the Featherstone riots. B. wrote *The Alabama Claim and Arbitration considered from a Legal Point of View*, 1868; and *Virgil in English Verse*.

Bowen, Elizabeth Dorothea Cole (b. 1899), Irish novelist, b. in Dublin, the daughter of Henry Cole B., of Bowen's Court, co. Cork. She came to England at the age of 7, was educated at Folkestone, and has lived in England with intervals spent in Ireland and travelling. Her first vol. of short stories, *Encounters*, was pub. in 1923, followed by *Ann Lee's and other Stories* in 1926. The full-length novel, *The Hotel*, appeared in 1927, and her reputation was firmly estab. by her succeeding novels, *The Last September* (1929), *Friends and Relations* (1931), *To the North* (1932), *The House in Paris* (1935), and *The Death of the Heart* (1938). Her stories are remarkable for their sensitive delineation of character and their revelation of the inner springs of motive. *Joining Charles and other Stories* was pub. in 1929, and *The Cat Jumps and other Stories* in 1934. In 1942 she pub. a family hist., *Bowen's Court*.

Bowen, Sir George Ferguson (1821-99), Brit. administrator and colonial governor, b. in Ireland, and educated at Oxford. Between 1859 and 1887 was successively governor of Queensland, New Zealand (put an end to Maori war), Victoria, Mauritius, and Hong Kong. He wrote *Ithaca* in 1850 (identifying it with Homer's); *Mount Athos, Thessaly, and Epirus*, 1852; *Imperial Federation*, 1886; and *Thirty Years of Colonial Government*, 1889.

Bowen, Richard (1761-97), Brit. naval officer, b. at Ilfracombe. In 1794 he received his appointment as commander, and in the same year became captain of the *Terpsichore*, 32-gun frigate, which he commanded till his death. After further operations in the W. Indies he returned to Europe, and in Oct. 1796, off Cartagena, captured the Sp. frigate *Mahonesa*. The *Terpsichore* was greatly damaged, but by Dec. she was off Cadiz, where she encountered the Fr. 38-gun frigate *Vestale*. His eventful career ended during Nelson's unlucky attack on Santa Cruz, July 1797, when B. was shot dead.

Bower, Archibald (1886-1866), Scottish eccles. historian, educated at Douay and

Rome. He joined the Jesuit order, 1706. He was a member of the court of the Inquisition in Macerata, 1723-26. He ed. *Universal History*, 1735-44; and wrote *History of the Popes*, 1748-66.

Bower, or Bowmaker, Walter (1385-1449), the 'continuator of Fordun,' abbot of the monastery of St. Columba, in the is. of Inchcolm, 6th of Forth. When John Fordun died, he had written his *Scotichronicon* to the death of David I., 1153, in 5 books. B. added 11 books, continuing the hist. to the death of James I., 1437. Walter Goodall pub. an ed. in Edinburgh in 1759.

Bowerbank, James Scott (1797-1877), Eng. geologist, b. in London. Succeeded with a brother to his father's distillery. Always interested in botany, astronomy, and natural hist. he worked enthusiastically at the microscope, and formed a large collection of fossils. He founded with others 'The London Clay Club,' 1836; pub. *History of the Fossil Fruits of London Clay*, 1840. Became F.R.S., 1842; part founder of Palaeontographical Society, 1847. B. was much interested in the study of sponges, and on retirement from active life wrote *A Monograph of the British Spongiadae* (Ray Society, 1864-82). The Brit. Museum bought his fine collection, 1864.

Bower Bird, or Satin Bird, name given to certain birds of the Australian family Ptilorhynchidae, the best-known species of which are *Ptilorhynchus holosericeus*, the satin, and *Chlamydoteria maculata*, the spotted B. B. Also known as birds of the Paradise family. The Eng. name is given. The B. B. is also found in New Guinea, e.g. the species *Amblyornis inornatus* on account of the birds habitually building bowers or 'runs' as well as nests.

Bow Fell, a mt. peak in the lake dist. of Cumberland, some 8 m. W. of Ambleside. Height, 2950 ft.

Bowfin, see MUDFISH.

Bowie-knife, an Amer. hunting-knife, called after Col. James Bowie (c. 1790-1836), who in a skirmish near Natchez, 1827, killed an opponent with a blacksmith's file; this file he afterwards fashioned into a double-edged blade, about a foot long and more than an inch wide.

Bow-legs (*Genu varum*), a deformity marked by separation of the knees when the ankles are touching. There is usually outward curvature of both femur and tibia. It may occur in one leg only, but is generally found in both. At birth all infants are bandy-legged, but during their first year a gradual change comes, the cartilage hardening to bone. In normal cases the lower limbs thus get prepared to support the body. Any attempt to walk too early must cause arrest in development of the limbs or an increase of the bandy condition. If a child is rachitic or weakly in any way this condition may be almost permanent. The chief cause is rickets, which makes the legs unable to support the weight of the body. Other causes are occupations of certain kinds (such as that of jockey or postillion), followed before the bones have

grown and hardened properly; traumatism, etc. Any active, heavy child may become bow-legged if allowed to be too much on its feet. Treatment must largely depend on the cause of deformity and the patient's age. In young children treatment of the constitutional disease will usually effect a cure; in older patients an operation is needed. In a case caused by rickets diet and general hygiene are of the utmost importance. Rest on the back and massage are advantageous. The deformity is the opposite to that known as knock-knee (*Genu valgum*) (q.v.).

Bowles, Samuel (1826-78) Amer. journalist, b. at Springfield, Massachusetts, son of Samuel B., who estab. the weekly *Springfield Republican*. B. jun. devoted most of his life to the daily *Republican*, and by his ability gave it a national reputation. B. also wrote books of travel. *The Life and Times of Samuel Bowles* (2 vols., 1835) by Merriam is practically a hist. of Amer. politics after the compromise of 1850.

Bowles, William Lisle (1762-1850), Eng. poet, b. at King's Sutton, Northamptonshire, educated at Winchester School and Trinity College, Oxford. He became rector of Bromhill, Wiltshire, and prebendary of Salisbury Cathedral. In 1789 he pub. *Fourteen Sonnets on Picturesque Spots*. His longer poems, *The Spirit of Discovery*, 1804; *The Missionary of the Andes*, 1815; *The Grace of the Last Saxon*, 1822, have not the merit of his sonnets. In 1807 he pub. his ed. of Pope's works, with a memoir and critical notes, which gave rise to the famous 'Pope and Bowles' controversy. See Gillilan's ed. of his works, with memoir, 1855, and G. Greener's *A Wiltshire Parson and his Friends*, 1926.

Bowling, an indoor game played in an alley with wooden balls and 10 wooden pins. Though played in Germany and the Low Countries since the fourteenth century, it attained its greatest popularity in the U.S.A., being introduced thither by the Dutch emigrants. Up to 1840 the Dutch pop. of New York played the game on the green, and the bowlers' square N. of the Battery is still called B. Green. The first covered alleys were of hardened clay or slate, but they are now of alternate pine and maple strips of a width of about 1½ ft. and set on edge and fastened together and to the bed of the alley. The alley itself is 41½ in. wide and 80 ft. long, while on each side is a 9-in. gutter to catch 'wides,' and at the back a heavily padded wall. It is played with 10 pins or 'skittles' (the tenth having been added to evade the law against the game of 9 pins), which are set up in the form of a triangle. The balls may be any size not exceeding 27 in. in circumference and 16½ lb. in weight. There is no limit to the number of players, though 5 is the usual number for championship teams. The object of the game is to knock the pins down, each player rolling 3 balls (a *frame*), 10 frames making a game, though in first-class matches only 2 balls are bowled. If all 3 balls are used, the number of pins overturned is recorded.

Where 2 only are used a seemingly complicated mode of scoring by strikes and spares is adopted. There are thousands of B. clubs in the U.S.A. and Canada, nearly all under the jurisdiction of the Amer. Bowling Congress. Variations of the game are cocked hat, quintet, four back, duck pin, head pin, etc., the variation being in the size or disposition of the pins, the size of the balls, the number of pins, or the mode of scoring. For the Eng. form of the game see SKITTLES.

Bowling Green: 1. Co. seat of Warren co., Kentucky, on the Barren R., and on the Louisville and Nashville railroad. It contains many educational institutions, including Ogden College, 1877; Potter College for Women, 1889; and the S. Norman School and Business College. It was incorporated in 1812, and received a charter in 1893. There is considerable trade in agric. produce, and also in horses and cattle. During the Civil war it was an important strategic point. Pop. 14,500. 2. Co. seat of Wood co., Ohio, on the Cincinnati, Hamilton, and Dayton, and the Toledo and Ohio Central railroads. There are foundries, canneries, cut-glass works, etc. Oil and natural gas are found, and it is an agric. dist. Pop. 7000.

Bowls, the oldest of Brit. outdoor pastimes next to archery, dating back, at least in its rudimentary forms, to the thirteenth century. Contemporary MSS. contain drawings, that sometimes represent players bowling at a jack (e.g. a MS. in the Windsor Royal Library, No. 20 E. iv.) and sometimes as bowling at no apparent mark at all (e.g. a fourteenth-century MS. book of prayers in the Douce collection at the Bodleian Library, Oxford). The game grew so popular that it threatened to jeopardize the practice of archery, with the result that statutes forbidding it, together with other sports, were passed in the reigns of Edward III., Richard II., and other monarchs. When the bow had fallen into desuetude as a weapon of war, bowling continued to be the subject of repressive legislation on account of its all-too-frequent connection with taverns, which caused them to be much patronised by gamblers and the dissolute generally. The word bowls occurs first in the Act of 1511, which confirmed previous enactments against unlawful games. Landowners under a later Act could obtain licences to play on their own private greens, but throughout the Tudor period the game continued to be the subject of legislative interference, and in Elizabeth's reign the scandals of the bowling alleys grew notorious. But the game still waxed in popular favour, and if Shakespeare is to be credited, women played it in his time (*Richard II.*, Act III. Sc. iv). By this time biased B. had been introduced, and doubtless pictures that represent Sir Francis Drake on Plymouth Hoe are accurate in portraying that historic match as being played with such B. In 1618 the game had grown high in royal favour, and James I. and his sons Prince Henry and Charles I. of

England were all enthusiastic bowlers. Evelyn and Pepys both record the fact that notable persons played the game for stakes; and indeed it was only after the revolution of 1688 that it degenerated once more into a pot-house recreation. Its revival is due to its popularity in Scotland, in which country it became popular in the nineteenth century although known at a much earlier date. The celebrated Southampton Bowling Club was founded as long ago as 1299. Many others, like the greens in Candle-riggs and Gallowgate, date back to the early part of the eighteenth century. It was not, however, until meetings were held in Glasgow to promote a national association that the game really became organised and a national code of rules adopted, and the first regular bowling club of which there exists any trace is the Willowbank Club, founded in Glasgow at the commencement of last century. Another notable step in Scotland was the use of seaside turf for seed-grown or meadow turf. Further, Scottish emigrants introduced the game wherever they went, notably in the colonies. B. is played on the continent of Europe, though hardly on scientific principles. There is also some warrant for supposing that the Dutch played it in the seventeenth century. In the last quarter of the nineteenth century, when the Scottish influence seemed to be waning, Australia led the way in organisation by the establishment in 1880 of the Bowling Association of Victoria and New S. Wales. In 1892 the Scottish Bowling Association was founded, and then between 1895 and 1904 the Midland Cos., the London and S. Cos., the Imperial, the Eng., and the Irish and Welsh bodies were formed, and though this multiplicity of associations tended at first to prejudice homogeneity in organisation, yet their very formation indicates the fact of the tremendous popularity of the game. It has now become quite a local feature of tns. In Scotland the public greens are self-supporting from a charge including the use of B. for a few pence an hour per player. In London the upkeep of the greens falls on the rates, and players have to provide their own B. There are 2 kinds of bowling-greens, the level and the crown. The former is the usual kind, the latter being confined almost entirely to the N. and Midland cos. The crown has a fall which may be as much as 18 in. all round from the middle to the sides and affords but limited scope for skill and scientific play. The level may be any size, but an ideal green is 42 yds. square. The orthodox direction is up and down—the corner to corner being really a shift adopted for an undersized green. The whole ground is excavated to a depth of from 1 to 2 ft., drained, and the turf laid over layers of gravel, cinders, mould, and silver sand. Round the entire green is a ditch space nearly level with the green and sloping gently away from it, the side next the turf being lined with boarding and the ditch itself being bottomed with wooden spars on the foundation; beyond

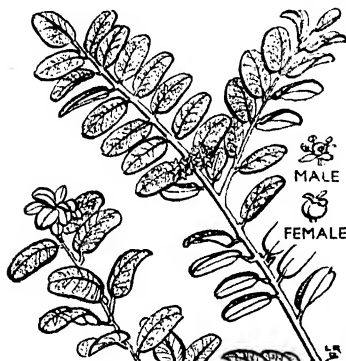
the ditch are banks of turf. The green is divided into spaces not less than 19 to 21 ft. in width styled 'rinks,' which word also designates each set of players, and these rinks are numbered on a plate fixed in the bank at each end. Every player uses 4 lignum vitae B. in single-handed games, but only 2 in matches. The bias is obtained by making one side more convex than the other, the bulge showing the side of the bias. No bowl must have less than No. 3 bias, i.e. it should draw about 6 ft. to a 30-yd. jack. The diameter of the bowl should not be less than $4\frac{1}{2}$ in. nor more than $5\frac{1}{2}$ in., while its weight should not exceed $3\frac{1}{2}$ lb. The jack is a white earthenware ball $2\frac{1}{2}$ in. in diameter. Theoretically the game is simple, the aim of the player being to roll his bowl so as to cause it to rest nearer to the jack than his opponent's, or to protect a well-placed bowl or to dislodge a bowl in a better position than his own. In practice, however, there is great opportunity for skill. Ordinarily a match team consists of 4 rinks of 4 players each. The leader of each rink is chosen for his skill in playing to the jack. The ideal position for the leader is a bowl at rest in front or behind the jack, but not obstructing the path of subsequent B. As a rule a 'singles' match consists of 21 points or 21 ends. See W. W. Mitchell, *Manual of Bowl-playing*, 1880; Sam Aylwin, *The Gentle Art of Bowling*, 1904; J. M. Pretsell, *The Game of Bowls*, 1908; J. A. Manson, *The Complete Bowler*, 1919; and F. Hotchkiss, *The Game of Bowls*, 1937.

Bowmaker, Walter, see BOWER, WALTER.
Bowman, Isaiah (b. 1878), Amer. geographer. Educated at the State normal college, Ypsilanti, Michigan, and at Harvard. Was assistant in physiography at Harvard, 1904-5, and, later, instructor in geography at Yale and prof. of geography at Yale, 1909-15. Director of the Amer. Geographical Society. Went with the geographical and geological Yale Peruvian expedition in 1907, and was leader of the expedition to the central Andes under the auspices of the Amer. Geographical Society in 1913. He was a member of various territorial commissions of the Peace Conference at Paris in 1919. Among his numerous pub. works are *Forest Physiography*, 1911; *South America*, 1915; *The Andes of Southern Peru*, 1916; *The New World—Problems in Political Geography*, 1921; *Desert Trails of Atacama*, 1923; *The New World*, 1926.

Bowman, Sir William (1816-92), Eng. oculist, b. at Nantwich. He was prof. of physiology at King's College, London, 1845-55; Fellow of the Royal Society, 1841; and of the Royal College of Surgeons, 1844; the first president of the Ophthalmological Society, 1880-83. He won a great reputation by his *Lectures on Operations on the Eye*, 1849. He pub., in conjunction with Todd, *The Anatomy and Physiology of Man*, 1843-56, and his *Collected Papers* were ed. by Sanderson and Hilke, with a life by H. Power, 1892.

Bowness, tn., on the E. shore of Lake Windermere, Westmorland, England, 8 m. N.W. of Kendal. Pop. 3800.

Bowring, Sir John (1792-1872), Eng. statesman, traveller, and linguist, b. at Exeter. He began life in a merchant's office, but devoted much of his time to languages, for which he had a remarkable talent. He became the first editor of the *Westminster Review*, 1824, and trans. much foreign poetry, both anct. and modern, into Eng. He was a member of Parliament 1835-37 and 1841-49, and an active free-trader; governor of Hong Kong, 1855. In 1856, the *Arrow*, bearing the Brit. flag, was fired upon, and B., to avenge the insult, bombarded Canton



BOX

without consulting the home gov. His action was severely criticised, and a vote of censure was moved against him in Parliament. He retired on a pension in 1859, and d. at Claremont. He wrote: *Poetry of the Magyars*, 1830; *Sketch of the Language and Literature of Holland*, 1829; *The Kingdom and People of Siam*, 1851; *A Visit to the Philippine Islands*, 1859; *Autobiographical Recollections*, 1877.

Bowsprit, the boom or spar projecting from the bows of a sailing ship and also of a steamer, when its stem is of the cut-water type. It supports the jib-boom. An elongation of the spar is used to fix the foremast stay-ropes, which carry the sails.

Bow Street, a street between Long Acre and Russell Street, London, W.C., famous for its police court, which is the chief police court of the metropolis. The first of the B. S. magistrates was Sir Thomas de Veil, who, when an acting justice, lived in B. S. (1735), and the court really owes its subsequent establishment in B. S. to him. Fielding, the great novelist, was the next holder of the post. Until 1829 the work of the B. S. magistrates embraced executive functions which are now performed by the commissioner of the Metropolitan Police. Extradition warrants under the Foreign Jurisdiction Acts are issued at B. S. police court. The street also gave its name to the B. S. runners, who served writs and acted as detectives up to the year 1829.

Bow Window, see BAY WINDOW.

Bowood, the seat of the Lansdowne family. It is 2 m. from Calne, Wiltshire, and is noted for its gardens.

Bowyer, William (1699-1777), Eng. printer; educated at St. John's College, Cambridge. In 1722 he became his father's partner in business, and in 1767 his firm was chosen printers to the 2 Houses of Parliament. His most important work was a Gk. N.T., and he also wrote 2 essays upon the *Origin of Printing*, which were pub. in 1774. He trans. Rousseau's first *Discourse* in 1751.

Box (*Burus*), genus of evergreen shrubs of the order Euphorbiaceae. The common B. (*B. sempervirens*) is widely distributed, and found in hilly, chalky dists. The wood is of commercial value, used in wood-engraving, and in the manuf. of musical and mathematical instruments.

Boxall, Sir William (1800-79), Eng. painter, b. at Oxford. He studied at the Royal Academy and in Italy. He exhibited his 'Jupiter and Latona' at the Academy in 1823; 'The Contention of Michael and Satan for the Body of Moses,' 1824; 'Milton's Reconciliation with his Wife,' 1829; 'Lear and Cordelia,' 1830; and 'Hope,' 1838. B. also designed illustrations for the Waverley novels. He visited Rome, 1833, and afterwards devoted himself almost entirely to portrait-painting.

Boxer or German Bulldog, a popular in Britain and the U.S.A. since being bred crossed with the Brit. bull-dog; an attractive companion and good guard. Colours are brindle, red, or fawn. It is muscular and compact, with broad head and short nose.

Box Day, in Scots law, 2 days appointed by the court of session during the spring vacation, two during the summer, and one at Christmas, for the lodgment of papers appointed by the lord ordinary in the previous session to be deposited in the court. It is so named from the boxes in which the documents are placed.

Box Elder, ornamental plant or shrub (*Negundum*) of the order Aceraceae or maples. It resembles the ordinary maple, but has pinnate leaves.

Boxers, The, name given by Europeans to the members of a secret society in China. This association, partly religious, partly political, was organised in 1896 by the prefect of Shantung. Its members were opposed to foreign influence, and their hostility was aggravated by demands of the W. powers for land and privileges in China. This, together with drought and famine and troubles at court, urged them on to terrible excesses. Murder of a missionary met with but slight punishment; hence they organised an anti-missionary rising, 1900, and determined to destroy all foreigners in their country. They marched through China pillaging, destroying railways, and murdering missionaries and Chinese Christians. The dowager empress gave support to the movement, the imperial troops making no attempt to crush the rising. At Peking the B. murdered the chancellor

of the Jap. legation and the Ger. minister, Baron von Ketteler, and then besieged the legations. This intolerable behaviour gave rise to an intervention of all the European powers. Amers. and Jap. also joined the allies for the purpose of suppressing the B. Hard fighting took place at Tientsin and elsewhere, but finally the relief party succeeded in freeing the besieged, Aug. 1900. The court fled, and the allies were left in possession of Peking until a peace was signed in Sept. 1901, by which China was obliged to pay a concerned. Most of the powers earmarked this money for educational and social efforts on behalf of the Chinese people. Consult for fuller details *China under the Empress-Dowager*, by Bland and Backhouse, 1910.

Box-hauling (navigation), a manoeuvre practised when a sailing-ship close hauled refuses to tack and there is not room to wear. The head-sails are thrown aback to give her stern-way, the helm then put alee, and she falls off, after which she is rounded to, and her proper course resumed.

Box Hill, a beauty spot in Surrey, England, being a spur of the N. Downs, 590 ft. high, about a mile from Dorking, and so named from the box trees in it. It was given to the nation by Leopold Salomons and is now held by the National Trust.

Boxing is the method of fighting with the fists either with or without gloves, though the latter method is not in vogue to-day, but at one time it was very common, and perhaps should really come under the heading of pugilism. In ancient times B. was practised at the Gk. games and the Rom. gladiatorial spectacles. Among both the Gks. and Roms., however, the naked fist was not used, but a kind of glove known as the *cestus*, made of leather and sometimes loaded with iron or lead. It was a terrible weapon, and these fights frequently proved fatal. It is in England, however, that the 'noble art,' as it is sometimes called, attained a high state of proficiency. It first came into public notice in this country in the early part of the eighteenth century. James Figg opened the first B. booth in London in 1719, and it continued to increase in popularity all through the reigns of the 4 Georges. Jack Broughton was the first man to think of using gloves for B. They were known as muffers, and the same boxer also drew up the first set of rules. After Broughton's death the public interest in the ring flagged a little, but a boxer named Tom Johnston stepped into the breach. From 1750 up to about 1820 the interest in the ring was enormous. All classes of society, high and low, took a part. Byron has related in his diary how he had lessons in B. from the famous 'Gentleman' Jackson, who made a fortune out of pugilism. Mendoza the Jew, Jem Belcher, Humphreys, Tom Cribb, Spring, and Dutch Sam, were all famous fighters of their day. Gully was a pugilist who afterwards entered Parliament, and more extraordinary still was the case of Bendigo, who became a

revivalist preacher, and of whom the story is told that he once used threats of a pugilistic nature to induce his congregation to give liberally to the collection. Since about 1820 the ring has been shorn of much of its glory, and the days of the 'Corinthians,' the rich patrons of the ring, are now over. From 1850 to 1860 public interest was re-aroused by the B. of such men as Sayers and Heenan, Broome and Mullins, but other sports have since grown in the public favour. In the late nineteenth and early twentieth centuries, however, there have been some notable boxers, among whom may be mentioned (James J.) Corbett, John L. Sullivan, Jeffries, Fitzsimmons, Tom Sharkey, Gunner Moir, and Bombardier Wells of the white men, and Peter Jackson, Sam Langford, and Jack Johnson of the negroes. The last became world's heavy-weight champion after defeating Jeffries in 1910, but was himself defeated by Willard in 1915. He d. in 1946. The First World War was followed by a great revival of B. Carpenter, the Fr. champion, was at the height of his fame, while Jimmy Wilde and Joe Beckett, the Eng. fly-weight and heavy-weight champions respectively, were also popular. In the U.S.A. B. had a phenomenal financial boom. In 1919 Dempsey became world's heavy-weight champion, and in 1921 he defeated Carpenter in a sensational contest. The gate receipts for this event, held in Jersey City, U.S.A., topped the million-dollar mark. This figure, however, was doubled when, in 1927, Dempsey met Gene Tunney for the second time in an unsuccessful attempt to regain the title which he had lost to Tunney the year before. In 1928 Tunney also defeated Tom Heeney, and then announced his retirement from the ring. Tunney had done much to raise the tone of professional B., and he was co-donor of the Tunney-Muldoon trophy. Titles were 'frozen on the outbreak of war in 1939, notable boxers at that time being Joe Louis, the negro boxer, world champion; Max Schmeling of Germany, European champion, former world champion; Fred Mills (United Kingdom), cruiser-weight champion; J. Paterson (United Kingdom), fly-weight; and Bruce Woodcock, among others. When boxing was resumed in 1946 Joe Louis successfully defended his title against Billie Conn in New York, June 19, 1946. Louis retained the heavy-weight championship of the world when he beat Joe Walcott on points in New York in Dec., 1947.

In England amateur B. is governed by the Amateur B. Association, founded 1884, and professional B. by the National Sporting Club. In the U.S.A. all B. is under the jurisdiction of the State Athletic Commission. The rules for B. were first drawn up by the eighth marquis of Queensberry in 1867, and the Queensberry Rules with some modifications still stand. The ring is roped in, and is usually 24 ft. square, although the National Sporting Club by a new rule requires it to be from 14 to 20 ft. square. Each glove is required to be not less than 6 oz.

in weight. The men wear light boots or shoes, with shorts and vests. Each round lasts 3 minutes, with 1 minute's rest between each for short contests, but for long ones it is sometimes longer. The men either fight a certain number of rounds and score by points, when the last round is 4 minutes, or the fight is to a finish, that is, until one man is 'knocked out.' If a man cannot come up when time is called for a new round, or cannot resume when knocked down before 10 seconds, he is 'counted out,' and loses the contest. The referee is the one to decide all points, though sometimes he is assisted by 2 judges, but he always has the option of the casting vote, should the judges disagree. Each competitor is allowed a second and 1 attendant, but no coaching or advice is allowed to be given to the combatant during the progress of a round, and any boxer who may fight unfairly, by hitting below the belt, hitting with the open glove, holding the ropes, or wrestling, may be disqualified by the referee, who has power to stop the fight at any time, or even if one man is getting too severely punished he can declare the contest over. The principal weights are fly-weight, bantam-weight, feather-weight, light-weight, welter-weight, middle-weight, light-heavy-weight, and heavy-weight. A brief explanation of some of the terms used in B. may be useful. 'Time' has already been described, and it is also used of a blow—one delivered at the most advantageous moment. The 'upper cut' is a blow given with either the right or left hand on the face of an opponent when he is leaning forward to deliver a blow at you. A 'cross counter' is to hit your opponent with one hand at the moment he is trying to hit you with his corresponding hand, and this by a little skilful dodging can be made a very effective blow indeed. 'Hitting below the belt' is illegal; a blow must be either on the upper part of the body; or the head, the arms, of course, can be hit in whatever position they may happen to be. 'Out-fighting' is to keep at more than arm's length of your adversary, and 'in-fighting' is to keep the contest within that distance. To 'break ground' is to move swiftly to one side when your rival opens his attack, which puts him off and leaves a good opening for your own attack. To 'break away' is a command of the referee when the men are apt to clinch or get too close. A 'duck' is to lower your head just as your opponent leads off at it, and so avoid his blow, while to 'draw back' is to get your head and body out of his reach without moving your feet. A 'counter hit' is not unlike the cross counter, it should be so timed as to touch your man at the very moment he is reaching forward to hit you, and properly carried out this is a very telling blow. A 'side step' is the act of bending down and changing the feet to the right or left very quickly as your opponent attacks. To 'lead off' is to start the attack; the right hand is usually held across the breast and the left used to lead off with.

A 'quick return' is most effective, and this must be done the moment you have been hit. A 'sharp rally' is a rapid exchange of blows without pause or draw back on either side. To 'parry' is to guard or ward off a blow with the arm; and finally a 'knock-out blow' is one which finishes the fight if it keeps your opponent on the ground while 10 seconds are counted. An interesting old book on B. is *Boxiana, or Sketches of Ancient and Modern Glove Fighting*, by Pierce Egan, 1824. More modern titles are T. C. Wignall, *The Sweet Science*, 1926; J. Wilde, *The Art of Boxing*, 1927; P. Longhurst, *Boxing*, 1928; P. Scott and R. J. Alexander, *Text-book of Boxing*, 1929; Viscount Knebworth, *Boxing: a Guide to Modern Methods*, 1931; B. Darwin, *John Gully and his Times*, 1935; Sir H. J. Preston, *Leaves from my Unwritten Diary*, 1936; L. Harvey, *Modern Boxing*, 1937; T. Inch, *Boxing*, 1948.

Boxing-Day, one of the Eng. bank holidays (Dec. 26). On B. the ann. presents or Christmas boxes were once given to employees, but it is now usually done on the last working day before the holiday.

Boxmoor, eccles. and residential dist. in Hertfordshire, England, 2 m. from Hemel Hempstead. Rom. remains have been found in the vicinity. Pop. 7000.

Boxtel, tn. near Bois-le-Duc, Holland, where the Fr. defeated the Eng. and Dutch allies, 1794. Here Wellington, then Col. Wellesley, witnessed his first battle and distinguished himself in covering the retreat.

Box-thorn (*Lycium*), genus of Solanaceae found in Europe and America, consisting of thorny shrubs and trees. *L. europaeum* grows in Europe, *L. fuchsoides* in S. America, and *L. vulgare* in N. America.

Boyacá, tn. in the dept. of Boyacá, Colombia. Here Bolívar defeated the Spaniards in 1819. Pop. 7000.

Boyar, or **Boyard**, an anct. order of Russian nobility. In early times the Bs. formed the council of the prince, and the title was only partly hereditary. Some of them were chosen from the prince's personal attendants and trusted warriors, other probably from leading men among the people. As time went on the military and civil Bs. drew apart, and the former, as in France, became the *noblesse d'espee*, and were termed courtiers, while the latter devoted themselves more to commerce.

Boyaux, winding trenches forming a means of communication between siege works or with the magazine.

Boy-bishop. In medieval times, on the feast of St. Nicholas (held up as a model for imitation by boys), Dec. 6, a choir-boy in each cathedral was elected by his fellows to act as bishop till Innocents' Day, Dec. 28, and during this period a number of burlesque ceremonies took place, with the full approval of eccles. and royal authorities. These buffooneries ended in England at the Reformation, but the Eton 'Montem' (which used to be held in winter but was stopped in 1844) is said to be descended from them.

Boyce, Hector, see **BORCE**.

Boyce, Samuel (d. 1775), Eng. poet and dramatist. Originally an engraver, and later in the S. Sea House. His works include *The Rover, or Happiness at Last*, a pastoral drama, 1752; *Paris or the Force of Beauty*, 1755; *Poems on Several Occasions*, a large paper copy of which was in the Garrick sale, 1757; *Specimens of Elegiac Poetry*, 1773; and a prose work, *A New Pantheon, or Fabulous History of the Heathen Gods, Heroes, Goddesses, etc.*

Boyce, William (1710-79), Eng. organist and composer, b. in London and educated at St. Paul's School, being a chorister in the cathedral, and later an apprentice to Dr. Maurice Greene. In 1734 he became organist at Oxford Chapel (St. Peter's), Vere Street, and in 1736 at St. Michael's, Cornhill, becoming in the same year composer to the Chapel Royal. In 1737 he was appointed conductor of the Three Choirs Festival, and in 1749 became organist at All Hallows, Thames Street, succeeded Greene as master of the king's band in 1755, and in 1758 became organist to the Chapel Royal. Works include music for stage entertainments, 2 oratorios, and 8 symphonies, but he is best known for his ed. of *Cathedral Music*, 1760-78.

Boycott, Charles Cunningham (1832-1897), Eng. land agent, educated at Blackheath and Woolwich. In 1850 entered the army; retired some years later as captain; 1873 agent for Lord Erne's estates in co. Mayo, coming into conflict, 1879, with the Land League agitators. They, under Parnell, began to persecute B., 1880; men refused to work for him, and he had to be placed under police protection. Hence the modern phrase 'to boycott a person' is derived. B. left Ireland for London and U.S.A., but returning in the autumn of 1881, was again mobbed and ill-treated. After this, conditions gradually improved; 1886, he became agent of Adair's estates in Suffolk; 1888, he gave evidence before the commission appointed to examine charges made by *The Times* against the Irish leaders. See Barry O'Brien's *Parnell*, 1.; *The Times*, June 22-24, 1897; *Correspondence of Lord Erne and Loughmask Tenantry*, 1880. See **BOYCOTTING**.

Boycotting, form of coercion consisting in a conspiracy to prevent all dealings, social, commercial, or otherwise, with the person aimed at, and the conspirators back up their orders by force. It derived its name from being first used against Capt. C. C. Boycott (q.v.), in 1880. This form of persecution was stringently dealt with under the Crimes Act of 1887, but is not yet extinct in Ireland. B. became more and more a form of international warfare. In 1912 the Turks declared a national boycott against everything It. Before that, in 1910, all Gk. goods were rigorously boycotted. The *Swadeshi* (or *Swadeshi*) movement in Bengal, India, was the boycott of Brit.-made wares as a protest against the partition of that province. Amer. trade-unions adopted this method of treating employers with whom they quarrelled.

Boyd, Andrew Kennedy Hutchinson (1825-99), Scottish divine and author,

widely known as A.K.H.B., b. at Auchinleck, Ayrshire; educated at King's College, London, and the Middle Temple; then returning to Scotland, he entered Glasgow Univ. and became a minister of the kirk, taking charge successively at Newton-on-Ayre, 1851-54; Kirkpatrick Irongray, Dumfries, 1854-59; St. Bernard's Edinburgh, 1859-65; and St. Andrew's, 1865-99. In 1890 he was elected moderator of the general assembly. As an author he won fame by his *Recreations of a Country Parson*, first contributed to *Fraser's Magazine*, an attractive series of articles concerning things in general, followed by his *Graver Thoughts and Critical Essays of a Country Parson* (1862-1875), and 3 vols. connected with life at St. Andrews.

Boyd, Mark Alexander (1553-1601), Scottish author, b. in Galloway. After a wild and unruly youth he left Glasgow College for the Continent, 1581. He studied law at Paris, Orleans, and Bourges under Jacques Cujas, whose friendship he won by some verses in the style of Ennius. In 1587 he served with Catholics in the League war for Henry III., but resumed his studies at Toulouse, 1588. Thence, as suspect, he escaped with difficulty during the Catholic insurrection to Bordeaux; 1592 he pub. at Antwerp Lat. poems dedicated to James VI.; 1595 he returned to Scotland, and was for a time travelling tutor to the earl of Castilis. He d. and was buried in Ayrshire. His *Epistolæ Heroïdes et Hymni* are to be found in Johnston's *Deliciae Poetarum Scotorum*, 1637. Among his prose and verse manuscripts (Advocates' Library, Edinburgh), are *In Institutiones Imperatoris Commenta* and *L'Etat du royaume d'Escoce à présent*. See D. Dalrymple, *Sketch of the Life of Boyd*, 1787; D. Irving, *Lives of Scottish Writers* (i.), 1839.

Boyd, Robert (d. 1590), fourth Earl Boyd, Scottish statesman. Helped the regent Arran in suppressing Lennox's rebellion, 1544; warred against the queens regent with the lords of the congregation, 1559; signed the treaty of Berwick, joining Eng. army at Prestonpans, 1560. B. subscribed to *Book of Discipline of the Kirk*, 1561. According to some accounts he was privy to the murder of Darnley; 1567, member of the packed jury acquitting Bothwell of the deed. Permanent member of privy council, 1567; fought for Mary Queen of Scots on various occasions (Langside battle), 1568; member of Mary's council, 1569; employed by her on various occasions, one being to obtain her divorce from Bothwell. He was suspected of complicity in the murder of Murray, 1570; joined regent's party, becoming privy councillor, and Morton's firm adherent after 1573 (appointed extraordinary lord of session). B. was a party to the 'raid of Ruthven,' and was banished for this, 1583; 1586, acted in negotiations for alliance between England and Scotland, and was restored to the bench.

Boyd, Zachary (1585-1653), Scottish divine, educated at the univs. of Glasgow and St. Andrews, afterwards becoming student and then teacher, under his cousin

Robert B., at the Protestant College of Saumur, France. When that tn. was treacherously occupied by Louis XIII. in 1621, and the Huguenots were persecuted, B. returned to Scotland, and became minister of the Barony par., Glasgow, which then held its services in the crypt beneath the cathedral. In 1634-35 and 1645 he was rector of the univ. He was a noted preacher and a staunch Covenanter. On Oct. 13, 1650, a month after the battle of Dunbar, he had the courage to 'deal faithfully,' as the phrase went, with Cromwell, who was present, in a sermon at Glasgow Cathedral, but though political opponents, the 2 men respected each other in private life. B. wrote many books, the best known being *The Last Battell of the Soul in Death*, 1629, and some books of verse, *Psalms of David in Meeter and Zion's Flowers*, the latter being metrical versions of Scripture, often known as 'Boyd's Bible.' His writings were marked by the quaint 'conceits' common in those times, but have some force. His *Four Letters of Comfort* were reprinted in 1878.

Boydell, John (1719-1804), Eng. engraver and print publisher, b. at Dorrington, Shropshire, and educated for the Church, but early left his profession for art; about 1741 apprenticing himself to a London engraver. About 1751 he began the publication of the works of other engravers, and in this direction was most successful, producing the work of Woollett, MacArdell, Hall, Earlom, Sharpe, Heath, J. Smith, Val. Green, etc. In 1790 he became lord mayor of London. His most famous production was the series of Shakespearean engravings which appeared in 1802.

Boy-Ed, Karl (1872-1930), Ger. naval officer, b. near Hamburg. The name comes from a union of his Turkish father's with that of his Ger. mother. Before the First World War he was engaged in propaganda work to induce the Ger. people to approve of money being spent for a navy which would equal, if not surpass, that of Great Britain. He was sent to Washington, D.C., as naval attaché to the Ger. embassy there in 1911. On the outbreak of war, he became known in the U.S.A. as director of Ger. espionage. Finally President Wilson forced his recall from the country some time before America entered the war. In Germany he resumed his job of propagandist for the Ger. Navy. D. from injuries received when thrown from his horse.

Boyer, Alexis (1757-1833), Fr. surgeon, b. at Uzarches in the Corrèze. He was the son of a tailor, and acquired his first knowledge of medicine in the shop of a barber-surgeon. Proceeding to Paris he studied under Louis and Desault, and in 1794 became second operator in the Hôtel Dieu. A few years later he attracted the notice of Napoleon, who in 1808 appointed him his house-surgeon and in 1807 made him a baron. When the New Academy of Medicine was created he was one of its first members, and after Napoleon's downfall he was surgeon successively to Louis XVIII., Charles X., and Louis Philippe.

His prin. works were *Traité complet de l'anatomie*, 1797-99, and *Traité des maladies chirurgicales*, 1814-26.

Boyer, Jean Pierre (1776-1850), a mulatto, b. at Port-au-Prince, Haiti. He was educated in France, and, returning to his native country, joined the army. Toussaint l'Ouverture's negro insurrection drove him back to France, where he served under Napoleon. Returning again to Haiti, he aided in the rebellion which overthrew Dessalines, the negro president (1806). Haiti now broke up into 2 republics under Pétion and Christophe. Siding with Pétion, B. became president in the S., and conquered almost all the ls. In 1825 he obtained Fr. recognition of Haitian independence by paying 150,000 francs, but in 1840 a popular insurrection drove him from the ls., and he fled first to Jamaica, then to Paris, where he d.

Boyle, mrkt. tn. in co. Roscommon, Eire, 28 m. S.E. of Sligo, on both banks of the R. B. Has considerable agric. trade, and the ruins of a fine Cistercian abbey. Pop. 2500.

Boyle, Charles, fourth Earl of Orrery and Baron Boyle of Marston (1676-1731), b. at Chelsea, and succeeded to the title of earl of Orrery in 1703. While at Christ Church he seems to have become involved in the dispute leading up to Swift's *Battle of the Books*. He was M.P. for Charleville, Ireland, 1695-99; for Huntingdon, 1701-1705, and later entered the army, ultimately settling as a courtier and diplomatist in London. He trans. Plutarch's life of Lysander, and wrote an ed. of the epistles of *Phalaris*, which involved him in the famous controversy with Bentley. (See BENTLEY, RICHARD.) Among the works of Roger, Earl of Orrery, will be found a comedy, entitled *As you find it*, written by Charles Boyle.

Boyle, John, fifth Earl of Cork, fifth Earl of Orrery, and second Baron Marston (1706-62), son of Charles B. (q.v.); educated at Christ Church. Famous as a friend of Swift, Pope, and Johnson. In 1751 he pub. *Remarks on Swift*, a rancorous criticism of Swift's life and works.

Boyle, Richard, first Earl of Cork (1586-1643), Irish statesman, b. at Canterbury; educated privately and at Corpus Christi, Cambridge, and entered the Middle Temple, but in 1588 left England for Ireland. He was accused by Sir William Fitzwilliam, Sir Henry Wallop, and others, of theft and embezzlement, but put their accusations down to conspiracy, and was about to lay his case personally before Elizabeth in England when the Munster rebellion broke out, and so reduced his fortunes that he was obliged to return to law in the Middle Temple. He was employed by Essex in Irish state business, and was again brought to trial at the instigation of Wallop, whose accusations he was able to refute. B. was then made clerk of the council of Munster, and went over to England on missions to the queen in 1601 and 1602, on the last occasion making arrangements with Sir Walter Raleigh to purchase all his lands in Ireland, obtaining 12,000 ac. for £1000.

This enormous estate he administered with firmness and energy, making improvements, and introducing new industries from England. In 1603 he was knighted, in 1606 became a privy councillor for Munster, in 1612 a privy councillor of state for Ireland, in 1616 was created Lord B., and in 1620 earl of Cork, in 1629 became a lord justice, and in 1631 high treasurer for Ireland. The appointment of Wentworth (Strafford) as lord deputy in 1633 involved him in difficulties, and Strafford's impeachment was no doubt partly due to B.'s skilful and inconspicuous opposition to him. B. was able to checkmate the rebels in Munster in the 1641 rebellion.

Boyle, Richard, first Earl of Burlington and second **Earl of Cork** (1812-97), son of Richard B. (q.v.). He took an active part in the Irish rebellion, 1642; was created Baron Clifford of Lanesborough, Yorkshire, 1643; lord-lieut. of the W. Riding of Yorkshire, 1663; and earl of Burlington, 1665. He was a supporter of William and Mary.

Boyle, Richard, third Earl of Burlington and fourth **Earl of Cork** (1695-1753), was appointed privy councillor, 1714; lord-lieut. of the W. Riding of Yorkshire, lord high treasurer of Ireland, 1715; and K.C.G., 1730. He had travelled in Italy, and while there acquired a love for architecture. Of his works in this direction the chief are: the front of Burlington House, Piccadilly, and the colonnade within its court; the assembly room at York; and parts of St. Paul's Church, Covent Garden.

Boyle, Robert (1627-91), Irish chemist and philosopher, b. at Lismore, Ireland; educated at Eton and by private tutors at home and on the Continent. In 1644 he returned to England, having inherited his father's manor of Stalbridge, Dorset. He began at once to show a fondness for scientific studies, and was influenced in this direction by the meetings of the Royal Society, then the Philosophical College, in 1645. While in England he made a speciality of chem., but on visiting Ireland in 1652-53 took up anatomy. In 1654 he settled at Oxford, and erecting a laboratory, was the leader of a small scientific society. About 1659, assisted by Robert Hooke, he invented the 'machina Boyleana,' the forerunner of the modern air-pump, and by means of experiments with the elasticity, weight, and compressibility of air, estab. B.'s law about 1660-62. In 1661 he pub. his *magnum opus*, *The Skeptical Chymist*, in which he overthrew the Aristotelian conception of the 4 elements and substituted the modern idea of an element, viz. a substance which cannot be decomposed into simpler ones. This book was the foundation stone of modern chem. In 1668 he settled in London, where he became a prominent member of the Royal Society, and issued numerous scientific and philosophical works, corresponding with all the greatest men in these branches of learning throughout Europe. Throughout his life he was also an earnest student of theology, and subscribed largely to

societies for the propagation of the Gospels. He appears to have been a man of singularly beautiful character, and was very popular, his reputation being international. His services to science were rather general than particular, but they were none the less valuable on this account, and he stands out as the originator of the 'experimental method.' Among his achievements may be mentioned the introduction of vegetable colour-tests of acidity, alkalinity, the preparation of phosphorus, and hydrogen, the construction of hermetically sealed thermometers, and the use of freezing mixtures, besides his researches into problems of elasticity and pressure. His complete works were pub. in 5 vols. in 1744.

Boyle, Roger, Baron Broghill and first **Earl of Orrery** (1621-79), Eng. statesman, soldier, and dramatist, b. at Lismore; educated at Trinity College, Dublin, Oxford, and on the Continent. On returning to England he held commands in the Scottish expedition, and the Irish rebellion of 1641-49, and later served under Cromwell in the subjugation of Ireland. Although a Royalist at heart, he supported Cromwell, and sat in his parliament, returning, however, to his old allegiance at the Restoration. He wrote dramatic and poetical works, which had some contemporary success.

Boyle Lectures, a series of lectures founded in 1691 by the will of Robert Boyle, which provided £50 per year for a minister to preach 8 sermons in a year 'for proving the Christian religion against Atheists, Theists, Pagans, Jews, and Mohammedans, not descending to any controversies among Christians themselves.' The office is tenable for 3 years, and among its holders have been Richard Bentley, 1692; Dr. Samuel Clarke, 1704; Rev. F. D. Maurice, 1846; Merivale, 1864-65; Prof. Plumptre, 1866; Prof. Stanley Leathes, 1868-70; Dr. Hessey, 1871-73; Henry Wace, 1874-75; Alfred Barry, 1876-78; Dr. Maclear, 1879-80; Canon Newbolt, 1890. Many of the lectures have been pub.

Boyle's Law, the law of the compressibility of gases. The temp. remaining the same, the vol. of a given quantity of gas is inversely as the pressure which it bears. This was discovered independently by Robert Boyle (q.v.), and by Mariotte. In England it is called Boyle's law, and in other countries, Mariotte's law.

Boylesve, René (*nom de plume* of **René Tardiveau**) (1867-1926), Fr. novelist, b. at La Haye-Descartes, Indre-et-Loire. Educated at the Jesuit College of Poitiers, the *lycée* at Tours and, for literature and laws, in Paris. Wrote numerous novels, generally marked by a close regard for style and respect for Fr. literary tradition. Among his best are: *Le Médecin des dames de Neans*, 1896; *Le Parfum des Îles Borromées*, 1898; *Mademoiselle Cloque*, 1899; *Le Bel Avenir*, 1905; *Mon Amour*, 1908; *La Jeune Fille bien élevée*, 1909; *La Marchande de petits pains pour les canards*, 1913; *Tu n'es plus rien*, 1917; *Élise*, 1921; *Le Carrosse aux deux lézards*

verts, 1922. Elected to the Académie Française, 1919. D. Jan. 15, 1926.

Boyne, Leonard (1853-1920), Irish actor, b. in Ireland. He made his debut at the Theatre Royal, Liverpool, 1870, as Leybourne in *The Flowers of the Forest*. He then toured in various tns. in England and Wales, first appearing in London as John Ferne in Robertson's *Progress*, at St. James's Theatre, 1874. B. also played in *Such is the Law* (1878); *A Gay Deceiver*, *Delilah* (as Col. Tempest), *Sister Mary*, *A Man's Love* (1889); *The Lights of London*, *The Streets of London*, *The Trumpet Call*, *The Benefit of the Doubt* (1895); *For Auld Lang Syne* (1901); *Becky Sharp* (as Rawdon Crawley), *The Marriage of Kitty* (1902). He also played D'Alroy in *Caste* (1889), and in *Our Boys*. He was the first representative in the Eng. provs. of Claudian and other modern parts, and also acted in New York.

Boyneburg (Bemelberg), Konrad (Kurt) von (1494-1567), one of the most renowned leaders of the Landsknechte in the time of the Emperor Charles. For a time he was page at the court of Duke Ulrich von Württemberg. He was trained in warfare under Sickingen and Frundsberg. On the expedition to Italy, B. was chosen as Frundsberg's deputy, and on the latter's sudden illness became commander-in-chief. He distinguished himself at the storming of Rome (1527), the defence of Naples (1528), and the capture of Florence (1530). He fought also against the Turks and Fr. The last battle at which he was present was St. Quentin, 1557. In 1571 Maximilian II. raised B.'s descendants to the rank of barons of the realm. See Solger, *Der Landsknechtsobrist Konrad von Bemelberg*, 1870.

Boyne River, riv. of Eire. It rises near Carbery, Kildare, and flows N.E. by Trim, Navan, and Drogheda, into the Irish Sea; total length about 70 m. It is famous in hist. for the battle of the B., fought in July 1690 between William III. and James II. The former had an army of Brit. and Dutch soldiers, with a regiment of Huguenot refugees; King James's army was mainly Irish, with some Eng. and Fr. officers. After a sharp fight the Irish were defeated, and James fled to France. An obelisk near Drogheda marks the scene of the battle.

Boys, C. V., see under RADIO-MICROMETER.

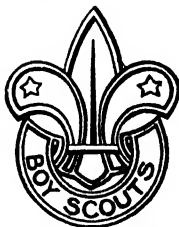
Boys' Brigade, The, organisation for boys, founded in 1883 by Mr. (afterwards Sir) William A. Smith, of Glasgow, with the object of promoting among boys 'habits of obedience, reverence, discipline, self-respect, and all that tends towards a true Christian manliness.' The brigade consists of 1300 companies of boys between the ages of 12 and 18. Each company is connected with a church or other Christian body. Military drill is used as a means of banding the boys together, and of training them in discipline and self-respect. Bible classes, gymnastic training, ambulance work, bands, club-rooms, scouting, athletics, swimming, and summer camps are ex-

tensively carried on. The B. B. is instituted in sev. Eng.-speaking countries and in the United Kingdom the membership numbers about 100,000 officers and boys. An organisation for junior boys, called the Boys' Life Brigade, membership 35,000, has been incorporated in the B. B. The B. B. and the sister institution, the Girls' Brigade, admit young people belonging to all sects. There are similar institutions organised under separate denominations, such as the Catholic B. B., the Jewish Lads' Brigade, and the Church Lads' Brigade (q.v.). The headquarters of the B. B. are at Abbey House, Westminster, London.

Boy Scouts, organisation for boys, founded in 1908 by Lt.-Gen. Lord Baden-Powell (q.v.). It has no definite drill, but aims at training boys to be manly, self-reliant, and self-respecting.

They learn to be quick and ready in action, and to co-operate one with another. The pledge taken is: 'I promise on my honour to do my duty to God and the king; to help other people at all times, and to obey the Scout law.' It is officially disclaimed that there is any military aim or meaning in scouting for boys. The purpose rather is to train up good citizens and inculcate principles of international good-fellowship. The boys practise signalling, tracking, and stalking, camping, and various other useful activities. Cooking and first-aid classes are attended, and observation of nature is encouraged. The unit for work is the 'patrol,' a party of some 6 or 8 boys under a boy leader. Any number of patrols may form a troop, under a scoutmaster and his assistants. Boys whose interest is in nautical affairs are enabled to join the Sea Scouts, and a corresponding body of Air Scouts was formed in 1941. Boys are divided by age into 4 classes: Wolf Cubs, for those of 8-11 years; Scouts, from 11 to 15; Senior Scouts from 15 to 18; and Rovers from 17½ upwards. The organisation of B. S. is based on decentralisation of authority and responsibility. Funds are raised locally. The standard uniform of the B. S. is chiefly of khaki colour, with various colours for the different troops and patrols (neckerchief and shoulder-knots). Considerable variations in uniform are permitted, however, in the following of traditional national dress.

In 1911 there was a royal rally of B. S. in Windsor Park, and the following year a royal charter of incorporation was granted. During the First World War B. S., and especially Sea Scouts, found oppor-



THE BADGE OF THE BOY SCOUTS IN GREAT BRITAIN

The fleur-de-lis is incorporated in varying devices in the badges of Boy Scouts in other countries.

tuntties for service, and in 1920 peace was celebrated by an international jamboree, held at Olympia, London. The boys of 27 countries were represented, testifying to the growth of the movement. This jamboree was a display of scout-craft, but in 1924 there was a rally of the scouts of 33 nations, who camped together for a fortnight in Denmark. Just previous to this there had been an Imperial jamboree at Wembley, and after that plans were made to celebrate the 'coming-of-age' of the movement in 1929. In Aug. of that year 50,000 B. S. met together at Arrowe Park, Birkenhead, representing 42 nationalities, which differed in language, creed, and colour. The Sixth World Jamboree was held in France at Moisson in August 1947, and the Brit. contingent, led by Lord Rowallan, numbered over 6000. During the Second World War the B. S., including the Sea Scouts and Air Scouts, distinguished themselves by useful service in home defence and in a number of other ways. Lord Rowallan became Chief Scout in Feb. 1945, in succession to Lord Somers, who was Chief Scout from 1941 until his death in 1944. The total active membership in the United Kingdom is over 446,202 (1948), and, in the rest of the Brit. Empire, about 742,060. The movement was introduced into the U.S.A. in 1910, and has grown rapidly, membership now numbering nearly 2,000,000. The aggregate world membership is about 5,000,000.

See Lord Baden-Powell, *Scouting for Boys*, 1908, *Aids to Scoutmastership*, 1920, and *Rovering to Success*, 1922; Lord Burnham, *Scouting on two Continents*, 1926; V. Barclay, *Good Scouting*, 1927; Lord Hampton, *Scouting Sketches*, 1928; E. K. Wade, *The Piper of Pax*, 1931; H. G. Elwes, *The Scout Spirit*, 1932; 'Gilcraft,' *Rover Scouts*, 1933; *Boy Scout Tests and How to Pass Them*; E. E. Reynolds, *Baden-Powell*, 1942.

Boz, the pseudonym under which Dickens, having put together a loose pile of papers, satires on institutions, pictures of private persons, and fairy tales of the vulgarity of his world, decided to publish them with the title *Sketches by Boz*, 1836. The *Pickwick Papers* were at first pub. under the same name, 1837. 'Boz' was really a nickname of his brother.

Bozen, see **BOTZEN**.

Bozrah, possibly el-Busseirah, S.E. of the Dead Sea, anct. cap. of the Edomites; or perhaps Bosra in the Hauran, S. of Damascus, with anct. Rom. ruins, a populous medieval city, now only a vil.

Bozzaris, **Marcos** (1783-1823), Gk. patriot, b. at Suli in Epirus. At an early age he entered into the struggle for the independence of Greece, but was defeated in 1803 by Ali Pasha, who forced him to retreat to the Ionian Isles. In 1820 Allied an insurrection against the sultan, and was joined by B. with 800 Sulotes who had been expatriated. B. was successful in sev. engagements, and continued the war after the death of Ali. He was defeated in 1822 at Petta and driven back to Missolonghi, which he defended very

ably. He fell at Karpenisi whilst leading a daring night assault upon the Turkish-Albanian army, which was completely routed although of far superior strength.

Bra, tn. in Piedmont, Italy, 31 m. S.S.E. of Turin; centre of silk-worm breeding industry, and has considerable trade in wine and silk. Pop. 18,000.

Brabanconne, La, the Belgian national anthem, written and composed during the revolution of 1830, when Belgium broke away from Dutch rule. The words were by a Frenchman, Jenneval, the music by a Belgian, Campenhout (real name Dechez). Jenneval was killed near Antwerp, Oct. 1830.

Brabant, name of a duchy, formerly part of Lorraine. Early in the fifteenth century the duchy of B., through intermarriage, became incorporated with Burgundy, and on the marriage of Mary of Burgundy to the Emperor Maximilian was transferred first to the Austrian empire, then under Charles V. to the Sp. crown. During the Netherlands rebellion, N. B. became a Dutch prov., while S. B. remained Sp. till 1714, after which it fell in turns to the Austrians, Fr., and Netherlands. In 1830 the Belgians achieved their independence and S. B. is now their central prov. The eldest son of the king of the Belgians is called the duke of B. B. is very densely peopled (area 1267 sq. m., pop. 1,784,000), and rich both in agriculture and manufs.; chief cities Brussels, Louvain, and Nivelles. N. B. is larger, but poorer, being very marshy. Area 1920 sq. m.; pop. 1,168,000. Chief tn., Hertogenbosch. See W. A. Arendt, *The Brabant Revolution, 1789-1796*, 1843; L. Van der Essen, *A Short History of Belgium*, 1920.

Brabant, Sir Edward Yewd (1839-1914), Brit. general, joined the Derby militia in 1855, and the year following went to S. Africa, where he entered the Cape Mounted Rifles. When troubles with the Transvaal came to a head in 1897, Col. B. was president of the S. African League, and on the outbreak of war in 1899 he raised the corps known as 'Brabant's Horse' which did splendid service throughout the campaign. In 1900 he was made K.C.B., and in 1902 commandant-general of the Cape forces.

Brabazon, **Hercules Brabazon** (1821-1906), Eng. painter, b. in Paris, Nov. 27; the son of Hercules Sharpe, he took the name of B. on succeeding to the B. estates in Ireland. He lived the life of a country squire, remaining an amateur in the arts, but nevertheless estab. a considerable reputation as a water-colourist in the Eng. tradition. He travelled widely in Europe and the Mediterranean, and his paintings are witness to this fact. See life by C. L. Hind (1912).

Brabazon, Sir John Palmer (1843-1922), Brit. general, b. Feb. 13, in co. Mayo, Ireland. He joined the Grenadier Guards, exchanging later into the cavalry. His first campaign was in Ashanti, 1874. In 1878 he served in Afghanistan, and in 1880 shared in Roberts's famous march to Kandahar, and the victory over Ayub Khan's army on Sept. 1. In the Suakin

campaign of 1884 he fought at E. Teb and Tamal, and served with the Light Camel Corps in the attempt to relieve Gordon, being present at the battle of Abu Klea (Feb. 1885). In the Boer war he led the second cavalry brigade, under French, during the operations round Colesberg (Jan. 1900), and afterwards commanded a div. of Imperial Yeomanry.

Brac, see **BRAZZA**.

Bracciano, Lago di, the anct. Lacus Sabatinus, lake about 25 m. N.W. of Rome. The basin is almost circular, and is either an extinct crater or a hollow caused by volcanic subsidence. The lake is 28 sq. m. in area, and 538 ft. above the sea, but so deep that its floor is actually below sea level. It has always been famous for excellent fish. Around its shores are many ruins of Rom. and perhaps even earlier origin.

Bracciolini, Francesco (1566-1646), It. poet, b. at Pistoia. His talents gained him early admittance to the academy of Florence. Through the influence of Cardinal Barberini, afterwards Urban XIII., he became secretary to Cardinal Antonio Barberini, and went with him to France. His works include a heroic poem, *La Croce Racquistata* (The Cross Regained), ranked by some critics next to Tasso's *Jerusalem Delivered*; *Lo Scherno degli Dei*, an imitation of Tassoni's *La Secchia Rapita*; *L'Assedio della Rocella*, a heroic poem in 20 cantos; and a poem on the election of Pope Urban XIII., who granted him the privileges of adding the Barberini arms to his own and styling himself B. dell'Api.

Bracciolini, Poggio, see **POGGIO**.

Braceborough Spa, inland spa near Stamford, Lincolnshire, England, the waters of which are a good remedy for blood and skin disorders.

Bracebridge, a small tn. in Canada situated on the Muskoka R., in Muskoka co., Ontario. It is about 60 m. N.E. from Collingwood. Pop. 4500.

Bracegirdle, Anne (c. 1663-1748), Eng. actress. The date of her birth is usually assigned to 1663, but by some it is put 10 years later. She had a brilliant career on the stage till, in 1707, she and her rising rival, Mrs. Oldfield, played Mrs. Brittle in Betterton's *Amorous Widow* on successive nights. The audience awarded the palm to Mrs. Oldfield, whereupon her rival quitted the stage, never to return, except for Betterton's benefit performance in 1709. She achieved her greatest successes as an actress in the plays of Congreve, to whom she was suspected of being secretly married.

Bracelet (O.F. dimin. of *bracel*, from Lat. *brachiale* (*brachium*, arm)), ornament worn from time immemorial by both sexes. Bs. are repeatedly mentioned in the Bible; Abraham's servant presented Rebekah with 2 gold Bs. (Gen. xxiv. 22), and one was taken, probably a royal arm-let, from Saul as he lay dead on Mt. Gilboa (2 Sam. i. 10). Throughout the E. in anct. times, an armlet of plain or enamelled metal was a regal ornament; Egyptian kings are represented as wearing such, and Bs. are still worn by E. princes. Among

the Lat. tribes *armillæ* were very massive; Petronius Arbiter says they sometimes weighed over 6 lb. The Roms. often awarded them as decorations for valour, to their own people only; on foreigners torques or other ornaments might be bestowed. Bs. were often given in Rome as birthday or wedding presents; as a rule virgins did not wear them. Among the Gks., who got their first designs from Asia, the snake-pattern was common, also penannular hoops with finial decorations. Among early Teutons and Scandinavians bronze armlets were often very large, protecting the whole fore-arm, and Bs. were given to brave warriors; in the Saxon Chronicle King Edgar is called 'bestower of Bs.,' as is also Athelstan (*Song of Brunanburh*); this term is applied to great chiefs. Very anct. Bs. were simple in pattern, of easily worked metals, gold, silver, copper, and bronze. As skill and luxury increased, the choice of materials became more varied, brass, polished steel, etc., being used, and jewels employed in the decorations, especially in India and Persia, where these ornaments were often of fabulous cost. One pair of Bs., taken at the sack of Delhi by Nadir Shah (1739), was valued at a million sterling. Designs multiplied greatly; highly wrought panels joined by clasps were among the triumphs of Etruscan art. Among barbaric tribes beads and plaited wire are much used to this day; the Kafirs of S. Africa are skilful in making Bs. of the latter material.

Braces (cf. Fr. *bras*), ropes attached to the yard-arms of vessels, by means of which the yards can be swung round and so the sails 'trimmed.'

Brach, term derived from the O.F. *braque*, *brachel*, dimin. of *brac* from Old High Ger. *bracco* or *brueco*, to indicate a scenting or hunting dog of the hound type. It is applied to the female.

Brachial Artery, the artery of the upper arm. It is a continuation of the axillary artery, and proceeds from the armpit downwards and outwards along the inner side of the arm, reaching the middle of the bend of the elbow. Its branches are the *superior profunda*, springing from the inner and back part of the brachial soon after its commencement; the *inferior profunda*, a smaller artery springing from the middle of the brachial; the *anastomotic*, providing the anastomoses at the elbow; and muscular branches to the muscles of the upper arm. The brachial subdivides in the lower arm into the radial and ulnar arteries.

Brachial Plexus, an aggregation of nerves in the lower part of the neck and armpit. The nerves engaged are the fifth, sixth, seventh, and eighth cervical and the first dorsal nerves.

Brachinus, genus of coleopterous insects of the family Carabidae, of which sev. species are Brit. See **BOMBARDIER BEETLE**.

Brachionus, genus of microscopic and aquatic beings of the phylum Rotifera and order Ploima. They have a long, flexible foot ending in 2 toes, and they swim by means of minute cilia. *B. urceolarius* is the commonest species.

Brachiopoda, phylum or class of marine invertebrate animals, classed by Cuvier with the molluscs, but bearing no affinity to them. They bear some affinity, however, to the Polyzoa and Annelida, but the resemblance to the Lamellibranchs, or true bivalves, is again superficial. The bivalve shells of the Brachiopods lie dorsally and ventrally, are unequal in size, and are symmetrical about the median line, while the shells of the Lamellibranchs lie right and left, are equal, and unsymmetrical about the median line. In this phylum the species are fixed, solitary unsegmented, and often have spirally coiled arms round the mouth. They are found at different depths in all seas, and the oldest fossils known are Brachiopods. They may be divided into the 2 orders *Ecardines*, of which the species have shells without a hinge, and *Testicardines*, of which the species have hinged shells. But a different and more usual classification ranges the B. in two sub-classes as follows: (i) *Articulata* or *Tretenterata*; family Craniadæ, Discinidæ, Lingulidæ. (ii) *Articulata*; family Terebratulidæ, Rhynchonellidæ, Thecidæ, Spiriferidæ, Pentameridæ, Strophomeridæ, and Productidæ. See T. Davidson's *Monograph of the British Fossil Brachiopoda*, 1851-1884; T. H. Huxley's *Contributions to the Anatomy of the Brachiopoda*, 1854.

Brachycephalle (Gk. *βραχύς*, short, κεφαλή, head), term applied to skulls of which the transverse diameter is more than eight-tenths of the long diameter. The heads of most individuals of civilised races are B., and the development of width in comparison to length in the skull has been taken to mark the development of the civilised element in races. This is a generalisation which, however, is by no means always true.

Brachycerus, genus of coleopterous insects of the family Curculionidæ, which are apterous and generally very rough. These weevils live on the ground in S. Europe and Africa.

Brachypodium, or false brome-grass, genus of tropical and temperate Gramineæ, of which there are 2 Brit. species, *B. sylvaticum* and *B. pinnatum*. The former grows in woods, the latter on open heath; the inflorescence is a simple raceme with unequal glumes.

Brachypteryx montana, or mountaineer warbler, bird of the family Timeliidæ, or babbling thrushes. By the Javanese it is known as *kekak*. In colour it is indigo, black, and white, in song it is garrulous and plaintive, in habit it is insectivorous, and builds its nest on the ground. It inhabits the wooded peaks of Java.

Brachyteles, genus of Cebidæ, consisting of 3 species of prehensile-tailed monkeys found in America. They have woolly hair, but the long tail is naked towards the tip, and the pollex is reduced.

Brachyura (Gk. *βραχύς*, short, *οὐρά*, tail), term applied to a large div. of decapod crustaceans which are characterised by having the short tails tucked up beneath them, e.g. the crabs, thus differing from the long-tailed crustaceans like the lobsters. The term is also applied sometimes

to very short-tailed bats, and *Brachyurus* to a genus of short-tailed monkeys of S. America.

Bracken (*Pteris* or *Pteridium aquilina*), species of Polypodiaceæ common in Great Britain. It has a creeping rhizome which grows at some depth below the surface of the soil, and sends up every year 1 large, much-divided leaf, known as a frond, at the base of which there is a nectary. On the back of the leaf-stalk it produces adventitious buds. In the B. there is a true lateral indusium, which is a delicate membrane of a yellow colour, and the margin of the pinnule bends over to protect the sporangia, thus forming a false indusium.

Brackenbury, Sir Henry (1837-1914), Eng. soldier, b. Sept. 1, 1837, at Bolingbroke in Lincolnshire; he joined the Royal Artillery in 1856, and served in Central India during the mutiny. In 1870-71 he assisted in the work of relieving the sick and wounded in the Franco-Ger. war. He went through the fighting in Ashanti in 1874, and in 1879-80 served as chief of staff in the Zulu war. In 1884-85 he led the riv. column in the Sudan campaign and was promoted to be major-general. His writings include: *The Last Campaign of Hanover*, 1870; *Narrative of the Ashanti Column*, 1885; and *Some Memorials of my Spare Time*, 1909.

Brackenbury, or Brakenbury, Sir Robert, descendant of a family in Durham dating back to the end of the twelfth century. Master and worker of moneys, and keeper of the king's exchange at the Tower, with jurisdiction over England and Calais; constable of the Tower for life, 1483. He served against the rebels under the second duke of Buckingham and was rewarded by Richard III. for his services by various grants. Keeper of lions in the Tower, vice-admiral and commissioner of the Admiralty; commissioner of jail delivery for Canterbury and Kent; knighted; constable of Tunbridge Castle; sheriff of Kent for some months, 1485. B. is said to have refused to murder the 2 little princes, but to have given over his keys to Tyrrell at Richard's command. He fought for Richard at Bosworth and was killed, 1485. See More's 'Life and Reign of Richard III.' in Kennet's *History of England*; 'Croyland Continuator', in Gale's *Rerum Anglicarum Scriptores*, i.; Walpole's *Historic Doubts*, 1798; *English History Review*, vi., 1891.

Bracket, a metal or wooden support which projects from a wall. Bs. have 2 uses. In architecture they support heavy weights, such as balconies, and as articles of furniture they are used to support much lighter things, such as lamps and ornaments of all kinds.

Bracklesham Beds, a sub-group of Bagshot Beds, being fossiliferous beds of strata belonging to the Middle Eocene formation. They are found in the cliffs round Bracklesham, Sussex, and the Isle of Wight.

Brackley, mkt. tn. and bor. in Northamptonshire; chief industries, brewing and boot-making. Once had considerable

wool trade, and sent 2 members to Parliament; has fine church, and school founded by William of Waynflete, 1447. Pop. 2500.

Brackley, Thomas Egerton, Viscount, see ELLESMERE, FRANCIS LEVESON-GOWER EGERTON, first EARL OF.

Brackwede, tn. of Westphalia, Germany, 2½ m. from Bielefeld, and near the Teutoburgerwald range. Pop. 13,000.

Bracon, the typical genus of the Braconidae in the Hymenoptera. It is a large genus, widely distributed in Britain, with parasitic larvæ, and differs from the ichneumon flies in having the cubital cell of the fore-wing separated from the second cubital by a single cell.

Bract, or **Hypophyll**, name given to the leaf in the axil of which a flower is produced; all plants do not have such leaves, and are then called *ebracteate*, while others, as the lily of the valley, bear Bs. and are said to be *bracteate*. If there are any other leaves between these and the floral leaves they are called *bracteoles* but these are often absent. B. leaves may be scaly, leafy, membranous, woody, or coloured; *petaloid* examples may be seen in the Bougainvillea. When they are arranged in a circle they form an *involucre*, as in the head of a daisy, or the 3 green leaves of the anemone; when they form a solid cup, as in the acorn, it is called a *cupule*; a single large B. which protects an inflorescence, as in the arum, is a *spathe*.

Bracon, Henry de (c. 1268), Eng. judge and writer on law. He was clerk in the king's service in the early part of his career, under the patronage of William Rayleigh. In 1245 he appeared as justice, and from 1248 until his death was a justice of assize in Somerset, Cornwall, and Devon. For a time he was also employed as judge in the king's central court, but 1257 saw him dismissed, probably owing to his connection with political events of that period. In 1259 he was made rector of Combe-in-Telghhead, and 2 years later he became rector of Barnstaple; 1264 saw him archdeacon, and a year or so before his death he attained to the chancellorship of Exeter Cathedral. His fame is chiefly due to his treatise on the laws and customs of England, the greater part of which was compiled 1250-56, and although it remained unfinished, it is considered the best work of any Eng. lawyer of the Middle Ages.

Bradbury of Winsford, Sir John Swanwick Bradbury, first Baron, b. Sept. 23, 1872, at Winsford, Cheshire, elder son of John Bradbury of that place, and of his wife Sarah, daughter of William Cross. Educated at Manchester Grammar School; and at Brasenose College, Oxford. He entered the civil service in 1896, and became joint permanent secretary of the Treasury and K.C.B. in 1913. His name suddenly became widespread on the outbreak of war in 1914; when, on the disappearance of gold currency, there came the issue of the treasury note for 1 pound, which was for some years popularly known as a Bradbury because of the signature of the secretary of the Treasury that appeared prominently upon it. B.

ceased to be secretary of the Treasury in 1919, and was prin. Brit. representative on the reparations commission at Paris, 1919-25. He was then chairman of the National Food Council, 1925-29; president of the Brit. Bankers' Association, 1929-30 and 1935-36; G.C.B., 1920; raised to the peerage, 1925.

Braddock, tn. in the co. Alleghany, Pennsylvania, U.S.A. It is situated on the R. Monongahela in S.W. Pennsylvania, about 10 m. S.E. from Pittsburg, at an altitude of 830 ft. There are extensive iron works in the neighbourhood. Pop. 18,300.

Braddock, Edward (c. 1695-1755), Brit. general, b. in Perthshire, being the son of Maj.-Gen. Edward B. He entered the army in 1710. During the later years of the war of the Austrian Succession he fought in Holland, being then a lieutenant-colonel. In 1754 he was made a major-general, and in the following year he went to Virginia to command the Brit. forces against the Fr. He was much hindered by the supply arrangements, but finally took the field with about 2000 men, amongst whom was the afterwards famous George Washington, and he attempted an attack upon Fort Duquesne (now Pittsburgh). The column fell into an ambush of Fr. and Indians, and were completely routed; B. himself, after conspicuous gallantry, was shot and fell mortally wounded. He d. shortly afterwards, and was buried at Great Meadow.

Braddon, Mary Elizabeth (1837-1915), Eng. novelist, b. in London. Her first success was *Lady Audley's Secret*, 1862, which she followed up with *Aurora Floyd* and *Eleanor's Victory*, 1863, and *Henry Dunbar*, 1864. These are all 'sensational' novels, constructed on melodramatic lines, with skilful and exciting plots and plenty of variety. Though never rising to the highest levels of fiction, Miss B., who wrote 70 novels, showed sustained powers. *Beyond these Voices*, pub. as late as 1910, being pronounced equal to its predecessors. Among her later novels may be mentioned *The Green Curtain*, 1911, and *Miranda*, 1913. Sev. of her stories appeared as serials in *Belgravia*, which she ed. for many years. In 1874 she married Mr. John Maxwell, publisher, and their son, Mr. W. B. Maxwell, has won considerable repute as a novelist and journalist.

Bradfield, a vil. in Berkshire, 8 m. from Reading, and noted for B. College, a public school, that was founded, as St. Andrews College, in 1850. It is famous for its open-air performances of Gk. plays, which are rendered in a theatre on the Gk. model, and held every 3 years.

Bradfield, John Job Crew (1867-1943), Brit. engineer; educated at Ipswich Grammar School and at Sydney Univ., New S. Wales. Graduated at Sydney in engineering up to his doctorate with first-class honours and the univ. medal each time. In 1891 he entered the Public Works Dept. of New S. Wales but, later, set up in private practice. He was consulting engineer for the design and construction of the Brisbane R. bridge

and approaches; but will be chiefly remembered as the designer and chief engineer of the great bridge across Sydney Harbour. Also designed and supervised the construction of the Sydney city underground railway. A member of the Sydney Univ. Senate and a fellow of the Australian and New Zealand Research Council.

Bradford, city, municipal, and co. bor. of the W. Riding of Yorkshire, England, has been connected with wool in one form or another for over six centuries. From the Middle Ages for three centuries or more woollen manufacturing was its staple industry; but in the seventeenth century the worsted trade began to drift from E. Anglia to the N. and B. became one of the chief seats. It is now the world's central mart for wool and wool and mixture products. B. is a comparatively modern city, and a place of rapid growth since the beginning of the industrial revolution. The worsted trade prospered exceedingly in B., even under the conditions of hand labour, but of course the steady growth of those early days bore no comparison with the boom which came afterwards with the introduction of steam power and the factory system. B. also profited greatly by the paralysis of Amer. manufacturing caused by the Civil war, and much more due to the Franco-Ger. war of 1871. It is estimated that the total value of the production of the wool textile industry before the Second World War was about £200,000,000. In 1946 the value of exports of wool yarns and manufs. was about £44,000,000, and as that was only 20 per cent of the total it can now be estimated that on the basis of 1946 the output was worth about £220,000,000. B. is chiefly concerned with the treatment of textile materials and their conversion into finished goods. It is the great centre of the sorting of fleeces as they come from dominion and foreign sources, or from the home farmer. The city is also the world's chief manipulator of the production, by the process of combing, of wool 'tops' (long fibres) and 'noils' (short fibres) and wastes of various kinds. It produces great quantities of worsted coatings for men, of linings for garments and, in great abundance, the materials for women's wear. Mercerised cotton goods are also a great feature, and altogether there are now sev. hundred large factories for the weaving of worsted, velvet, plush, alpaca, mohair, silk and rayon, and mercerised cotton fabrics. A few of the largest firms have their own dyeing and finishing plant, but in regard to the bulk of the products of the mills, they must pass, at one stage or other of the processes of manuf., into the care of the separate dyer. Engineering is another great industry of B. The making of boilers, condensing plant, pumps, marine machinery, lift machinery, machine tools, and motors is carried on upon a large scale. Electrical engineering has also come into prominence: products include all kinds of electric generators and motors for industrial and domestic purposes; the complete electrical equipments,

including the traction motors for electric and diesel-electric locomotives and railway coaches, and for tramcars and trolley buses. Other industries are stone quarrying, browsing, building, structural engineering and public works contractors, manuf. of disinfectants, photo engraving, printing and publishing, etc. B. is connected with the Mersey and the Humber by canals, and is an important railway centre. There are many fine public buildings, including the cathedral the site of which probably dates back to the fourteenth century, when the church was rebuilt by the de Lacy's. B. was created a bishopric in 1920. A scheme for the restoration of the cathedral has been begun, and the year 1958 has been set as the time for completion. The tn. hall has a tower which contains a very fine clock, with carillon chimes. The building was completed as to its first design in 1873, and enlarged later, but has now become inadequate. Other notable buildings are the Forster Square railway station of the N.E. Region of British Railways which, with its hotel, cost over £1,000,000; the chamber of commerce (called Commerce House), a seven-storey building; the Cartwright Memorial Hall in Lister Park, B.'s art gallery and museum, and the most ornamental piece of architecture in the city; St. George's Hall (1853), once the general public assembly place of B.; the post office, built at a cost of £250,000; the exchange, with a fine statue of Cobden; Olympia Hall for exhibitions and the like; and Bolling Hall, the only building of any antiquity apart from the cathedral. City statues include those of Peel, W. E. Forster, Sir Titus Salt, and Richard Gastler. The existing charter of the B. Grammar School was granted by Charles II. (1662), but the foundation dates back to an unknown time before the reign of Edward VI. B. Girls' Grammar School was estab. in 1875. There is a college of art and the technical college is one of the largest of its kind in the country (founded 1880). The Mechanics' Institute originated in 1832, though the present building was only erected in 1871. The parks include Lister Park, better known as Manningham Park, containing, besides the Cartwright Memorial Hall, a recording station of the meteorological section of the Air Ministry, and open-air swimming pools which, after great alterations, were reopened in 1939; Baildon Moor (670 ac.), kept as a recreation ground; and Horsfall playing fields.

Records of B. indicate that in the reign of Edward the Confessor the manor was in the hands of one Gamel, and was valued at 'four pounds troy weight of silver.' During the Norman conquest of the N. of England it appears to have been destroyed, for the Domesday entry says onigmatically 'Ilbert hath it; it is waste.' The Ilbert referred to was a de Lacy, in which family the manor continued until the fourteenth century. In 1311 the pop. was 650, and there was already a fulling mill yielding £1 per annum. The mention of the fulling mill in 1311 indicates that the woollen industry had already become estab. in the tn., and by the sixteenth

century it had become an important part of the life of the tn. A weekly market was granted in 1251, and confirmed in 1294. Edward IV., in 1481, also confirmed the market, and granted 2 ann. fairs. In 1540 Leland visited the tn. and in his *Itinerary* said that 'it standeth much by clothing' and was 'a praty quik town.' The first B. mill was estab. in 1798, and by 1841 there were 70. In 1847, the year in which B.'s progress to modern prosperity began, the united townships of B., Manningham, Horton, and Bowling were granted a charter of incorporation. The tn. was not represented in Parliament before 1832, when it was created a parl. bor., returning 2 members; it was evidently a bor. of proscriptio until 1847. In 1885 there were 3 members and in 1918 4. In 1907 B. received the honour of a lord mayor. In the Second World War there was some damage by air raids, including a large drapery stores destroyed, the complete or partial destruction of a few other buildings, and about 1000 dwelling houses. Pop. 298,000.

Bradford, tn. in McKean co., Pennsylvania, U.S.A., in a rich oil-producing dist. Has large petroleum refineries, also manufs. iron ware, glass, chemicals, etc. Pop. 17,600.

Bradford, Andrew (1686-1742). Amer. printer and publisher, son of William B. (q.v.), the printer. In 1719 he began the issue of the *American Weekly Mercury*, the first newspaper in Pennsylvania. In 1741 his *American Magazine* ran for 6 months.

Bradford, Sir Edward Ridley Colborne (1836-1911). Brit. soldier; joined the Madras cavalry in 1853. During the Mutiny he distinguished himself in the operations against Tantia Topee, and afterwards acted first as political agent, then head of the criminal dept. concerned with Thuggism, and later as political secretary to the Indian Gov. Returning home, he was in 1890 appointed commissioner of police in London. He was made G.C.B. in 1897, and baronet on his retirement in 1903.

Bradford, John (c. 1510-55). Eng. Protestant preacher. Rather reckless in youth, he was educated at Cambridge (becoming fellow of Pembroke Hall), and converted by Latimer. B. became Ridley's chaplain, 1550; prebendary of St. Paul's, 1551; royal chaplain to Edward VI., 1553. His preaching won praise from John Knox. Tried before Gardiner and Bonner, he was burned at Smithfield under the Marian persecutions. B.'s writings were ed. by Townsend for the Parker Society, 1848-53. See Stevens's life, 1832.

Bradford, Samuel (1652-1731). Eng. bishop, educated at St. Paul's School and, after the plague and fire, at Charterhouse; went to Cambridge, 1669, leaving without a degree because of religious scruples. Studied medicine for a time; in 1680 was admitted to degree of M.A. by royal mandate; 1697, was incorporated at Oxford. B. took orders after the Revolution, becoming deacon and priest, 1690; 1691, minister of the church in Southwark, and

one of the governors of St. Thomas's hospital. Became tutor to grandsons of Archbishop Tillotson, being made rector of St. Mary-le-Bow, 1693; B. often preached before the corporation of London, and lectured at various places. He was a staunch Whig and Protestant; 1698, William III. made him royal chaplain in ordinary. He continued in office under Anne, becoming prebendary of Westminster, 1708. His sermons on 'The Credibility of the Christian Revelation, from its Intrinsic Evidence,' were pub. with others in *A Defence of Natural and Revealed Religion*, 1739. Bishop of Carlisle, 1718; bishop of Rochester and dean of Westminster, 1723.

Bradford, William (1590-1657). Amer. colonial governor and historian, b. near Doncaster. As a 'Pilgrim Father' sailed in the *Mayflower* for Virginia, 1620, but through storms landed at Plymouth, U.S.A. B. succeeded Carver as governor of this settlement, 1621, ruling firmly and wisely, and showed tact in dealing with the Indians. He was author of *History of Plymouth Plantation*, pub. in *Proceedings of Massachusetts Historical Society*, 1856; also of *Dialogues* on church gov.

Bradford, William (1663-1752). Amer. colonial printer, b. in Leicestershire, England; emigrated with Penn to Pennsylvania, where in 1685 he introduced printing into the middle colonies, his first imprint being an almanac, *America's Messenger* (1685). His press having been seized on his issuing a tract for the minority sect of Friends, was restored to him on appeal by Governor Fletcher. Removing to New York in 1693, he became royal printer for the colony, holding the post for 50 years or more, issuing in 1725 the first number of the *New York Gazette*.

Bradford, William (1722-91). Amer. publisher, grandson of above; estab. in 1742 the *Pennsylvania Journal and Weekly Advertiser*. He served in the war of Independence, rising to the rank of colonel.

Bradford, William (1755-95). Amer. jurist, son of above, also served in the war of Independence, afterwards becoming first attorney-general of Pennsylvania, then judge of the supreme court of that state, and finally attorney-general of the U.S.A. (1794-95).

Bradford-on-Avon, anct. mrkt. tn. in Wiltshire, near Bath, England. St. Aldhelm was abbot of B. monastery in A.D. 705, and the little church of St. Lawrence, still perfect, dates from Saxon times. B. is mentioned as a bor. in Domesday Book. Under the Stuarts it was the chief cloth-manufacturing tn. in the W. of England, but its prin. industries now are brewing and the making of rubber goods. Pop. 5000.

Brading, a vil. 4 m. S. of Ryde, in the Isle of Wight. In it are a bull ring and the remains of a Rom. villa. Pop. 2000.

Bradlaugh, Charles (1833-91). Eng. secularist and politician, b. at Hoxton, London. Being the son of a solicitor's clerk, in poor circumstances, he went to work as an office-boy, but while still a lad

imbibed freethinking ideas, and through them lost his situation. At 17 he enlisted as a soldier, but bought himself out after a few years. He then became a 'free-thought' writer and lecturer, calling himself 'Iconoclast,' and gradually rose to be a prominent leader among 'advanced' political societies, Reform Leaguers, Secularists, and Land Law Reformers. His freethought paper, the *National Reformer*, was prosecuted by Gov. for blasphemy and sedition in 1868, but B. defended himself with much skill, and judgment was eventually given in his favour. His advocacy of atheistical opinions aroused intense opposition, and for some years he was attacked both in the law courts and the press. This antagonism was in 1876 intensified by his republishing, in alliance with Mrs. Annie Besant, an Amer. pamphlet on birth control, *The Fruits of Philosophy*, which had already been condemned by an Eng. court of law. Both were sentenced to a heavy fine and imprisonment, but the conviction was quashed on technical grounds. B. had for some years been seeking to enter Parliament, and in 1880 was elected for Northampton; refusing, however, to take the oath he claimed liberty to affirm under the Parl. Oaths Act, but he was rejected by the House, his subsequent offer to take the oath 'as a matter of form' being regarded as insulting. After being re-elected 4 times, he was at last permitted to enter, on his own terms, in 1886, the Speaker refusing to allow a motion to be made restraining him from taking the oath. B. accordingly took it, and sat and voted, subject to the risk that the law officers of the Crown might proceed against him under the above Act. By his courage in face of opposition B. did much to make free speech possible where it was not so before his time. See J. Gilmour, *Charles Bradlaugh*, 1933.

Bradley, Andrew Cecil (1851-1935), Eng. scholar; b. at Glasbury, Brecknock; brother to F. H. Bradley (q.v.) and half-brother to G. G. Bradley (q.v.), educated at Cheltenham and Balliol College, was elected fellow of Balliol in 1874, and lectured there from 1876 to 1881. He was prof. of modern literature at Univ. College, Liverpool, from 1881 to 1889, and at Glasgow Univ. from 1889 to 1900, then prof. of poetry at Oxford from 1901 to 1906. He pub. a *Commentary on 'In Memoriam'*, 1901; *Shakespearean Tragedy*, 1904; *Oxford Lectures on Poetry*, 1909; *A Miscellany*, 1929.

Bradley, Edward (1827-1889), Eng. writer, graduated at Durham Univ. in 1848. Wrote under the name of 'Cuthbert Bede.' As a contributor to *Punch* and *Leisure Hour*, he was well known to his contemporaries, but his claim to posthumous fame rests on his *Adventures of Mr. Verdant Green, an Oxford Freshman*, 1853. It is full of fun, and, considering the author was not an Oxford man, remarkably true to life.

Bradley, Francis Herbert (1846-1924), Eng. philosopher; b. at Glasbury, Brecknock, Jan. 30; brother to Andrew B. (q.v.) and half-brother to George B. (q.v.),

dean of Westminster. Educated at Univ. College, Oxford, became fellow of Merton College. Prin. works: *The Presuppositions of Critical History*, 1874; *Ethical Studies*, 1876 (reissue with additions, 1927), in which he attacked Utilitarianism; *The Principles of Logic*, 1883 (revised, 1922); *Appearance and Reality*, 1893; *Essays on Truth*, 1914. To the world at large he will be memorable for his irrevocable definition (in the preface to *Appearance and Reality*) of Metaphysics: 'the finding of bad reasons for what we believe upon instinct.' Awarded the O.M. D. Sept. 18, 1924.

Bradley, George Granville (1821-1903), Eng. scholar and divine, b. at Glasbury, Brecknock, Dec. 11. He was educated at Rugby under Arnold, and at Univ. College, Oxford, where in 1844 he was elected a fellow. In 1858 he was appointed headmaster of Marlborough, where he was very successful. His personal influence was remarkable; Tennyson said he sent his son 'not to Marlborough but to Bradley.' Returning to Univ. College in 1870 as its head, and finding the standards both of discipline and learning only moderate, he set to work as a reformer with such success that admission to his college became an honour to be competed for. On Dean Stanley's death in 1881, B. was chosen to succeed him as dean of Westminster. After the coronation of Edward VII. (Aug. 1902), Dean B. retired from office. He was buried in the abbey. His *Life of Dean Stanley* was pub. in 1892.

Bradley, Henry (1845-1923), Eng. philologist, b. at Manchester, Dec. 23; son of John Bradley of Kirkby-in-Ashfield, and his second wife—who in 1846 removed with their family to Brimington near Chesterfield. They were Congregationalists; and Henry adhered to the same denomination. He was educated at Chesterfield Grammar School. He married in 1867, and soon had a considerable family. He wrote notes for the *Sheffield Independent*—chiefly on place-names: a subject upon which he soon became the recognised authority. He went to London in 1883, and became a contributor to the *Academy* and the *Athenæum*. The editor of the former handed him for review the first instalment of James Murray's *New English Dictionary* (the great 'Oxford Dictionary'), and the critique he wrote induced Murray to invite him to join in the editorship. This he did not immediately do, but he was an early contributor. He was temporary editor of the *Academy*, Oct. 1884 to May 1885. He began editorial work on the great dictionary in Jan. 1888. Early in 1892 he broke down through overwork, and was sent to Norway, where he regained health; meanwhile he was granted a Civil List pension of £150, and £200 from the Literary Fund. In 1896 he removed to Oxford, where he devoted himself entirely to the dictionary, becoming editor-in-chief on Sir James Murray's death in 1915. His chief original works are *The Story of the Goths*, 1888, and *The Making of English*, 1904; as editor he brought out

sev. important works, including *Caxton's Dialogues* (Early Eng. Text Society) and a revision of Morris's *Elementary Lessons in English Grammar*. See his *Collected Essays*, with a memoir by Robert Bridges (1927).

Bradley, James (1693-1762), Eng. astronomer, b. in Gloucestershire at Sherborne, and entered Balliol College, Oxford, in 1711. He became a fellow of the Royal Society in 1718. He took orders on his presentation to a vicarage in 1719, but resigned in 1721 in order to take up the professorship of astronomy at Oxford. In 1739 he put forward his theory of the aberration of light, and in 1748 the theory of nutation. In 1742 he became astronomer royal, and was able to obtain new apparatus to further his discoveries. He was offered the vicarage of Greenwich to supplement his salary, but this he refused, and in 1752 was given a crown pension of £250 per annum instead. He retired in 1761 or 1762 to Gloucestershire, where he died.

Bradley, Margaret Louisa, see WOODS.

Bradley, Omar Nelson, Amer. gen., b. at Clark, Missouri, Feb. 12, 1893; educated at the U.S. Military Academy, W. Point, and commissioned in 1915. He held a number of appointments, including that of secretary to the gen. staff, and in 1913, during the Second World War, he took command of the U.S. 2nd Corps in the N. African campaign, being present in the final drive against the Gers. in Tunis. In this campaign he held the rank of lt.-gen. (temporary), and was given the permanent rank of maj.-gen. In Sept. 1944. In Jan. of that year it was announced by Gen. Eisenhower that B. was to lead the ground forces in the invasion of Europe, and throughout the fighting in Normandy, and subsequently, he commanded the U.S. Twelfth Army Group, which in Aug. was made independent of the Brit. Twenty-first Army Group, commanded by Gen. (later F.M.) Montgomery, thus giving the 2 commanders equal status. The U.S. Twelfth Army Group comprised the Amer. First, Third, Ninth, and Fifteenth Armies (see WESTERN FRONT IN SECOND WORLD WAR). B. was promoted full general (temp.) in 1945. K.C.H. (hon.), 1944; and succeeded Gen. Eisenhower as chief of staff of the U.S. Army in 1947.

Bradman, Sir Donald George, Australian cricketer, b. Cootamundra, New S. Wales, Aug. 27, 1908. Educated at Bowral Intermediate High School. He first played for Australia in 1928 against the M.C.C. team. At Sydney, in 1929-30, he beat previous records by scoring 452 not out in 415 minutes against Queensland. In the second innings of his first match in England at Trent Bridge (1930) he made 131, following with 254 at Lord's, 334 at Leeds, and 232 at the Oval. The Leeds innings beat the record individual score in test matches between England and Australia which had been held by R. E. Foster since 1903-4 with 287 at Sydney. He led the Australian eleven against England in Australia in 1934, in England in 1938, in Australia in 1946-47, and in England in 1948. His test match average in 1946-47

was 97.14. In 1938 he made 13 centuries in all matches of that season. In 1938-39 he scored 6 consecutive centuries (a feat also accomplished by C. B. Fry in 1901). He is among the few cricketers to make 1000 runs in May, achieving the distinction in 1930 and again in 1938. His batting average of 115.66 in 1938 is the highest ever recorded in England. In his final season before retirement from test cricket (1948) at the age of 40, his aggregate was 2428, his highest score 187, his



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average 89.92, and in that season he scored 11 centuries. In this last season he had the satisfaction of leading a team which sustained no defeats. Knighted 1949.

Bradshaw, George (1801-53), Eng. publisher, b. at Pendleton, Lancashire. He was in business at Manchester as a map-engraver and printer when the railway era began, and in 1839 he pub., at sixpence, the first of his *Railway Time Tables*. In 1840 this was enlarged and raised in price, but in Dec. 1841 he began a monthly issue of the tables once more at sixpence, and in 1847 commenced his *Continental Railway Guide*. He was a member of the Society of Friends.

Bradshaw, Henry (c. 1450-1513), Eng. Benedictine monk and poet, b. at Chester. Studied theology at Oxford, and then returned to his monastery at Chester. His *De Antiquitate et Magnificentia Urbis Cestrie* is lost, but the *Life of St. Werburgh*, largely a compilation, remains. It is written in Eng. 7-line stanzas.

Bradshaw, Henry (1831-86), Eng. scholar and librarian, *b.* in London, educated at Eton and King's College, Cambridge, of which he became a fellow, 1853. After a short scholastic career in Dublin he returned to Cambridge as assistant in the univ. library. This post he resigned to gain more time for antiquarian research, and he compiled a catalogue of the MSS. of the library. His discovery in 1857 of the *Book of Deer* threw light on ant. Celtic language and literature. Another discovery was that of MSS. containing the earliest remains of the Waldensian language and literature. In 1866 he discovered 2 previously unknown poems—*Legends of the Saints*, and some lines on the *Siege of Troy*, which he found in a MS. of Lydgate's *Troie Booke*. Praise is due to him not only for his valuable discoveries, but also for his efforts to improve the standard of library administration. He was univ. librarian in 1867. His *Collected Papers* were pub. by F. Jenkinson, 1889. Consult *Memoir* by Sir G. W. Prothero, 1888, and C. F. Newcombe, *Some Aspects of the Work of Henry Bradshaw* 1905.

Bradshaw, John (1602-59), the president of the court which sentenced Charles I. to death. *B.* was *b.* in Cheshire, and received a fair education, being called to the Bar in 1627. He became of sufficient prominence in his native co. to be mayor of Congleton, and later recorder of the bor. He became prominent as a lawyer, and took part in a number of trials of importance during the period 1640 to 1647. In 1647 he was made chief justice of Cheshire and a Welsh judge. When the king was brought to trial, *B.* accepted the post of president of the court, a court the jurisdiction of which Charles I. rightly, but uselessly, refused to recognise. *B.* put aside all legal objections to the court, and even refused to allow Charles to speak in his own defence. After the execution of the king, *B.* became one of the prominent leaders of the Commonwealth. He was a staunch republican, and branded as illegal Cromwell's dissolution of the Rump Parliament. He was an opponent of Cromwell during the Commonwealth period, and was forced into retirement. He again appeared in 1659 after the abdication of Richard Cromwell, but *d.* in Oct. of that year. He was buried in Westminster Abbey, but his body was disinterred on the Restoration.

Bradshaw, William (1571-1628), Puritan divine, educated at Worcester, Ashby-de-la-Zouch grammar school, and Cambridge. Became tutor in the family of the governor of Guernsey (c. 1595), coming under the influence of Thomas Cartwright. On returning to England he preached for a time in vils. near Cambridge. In 1601 *B.* became a lecturer at Chatham, but was suspended for heretical teaching. A patron in Derbyshire helped him for a time; he was chosen lecturer at Christ Church, Newgate, 1605, but the bishop would not authorise him; in 1605 *B.* pub. *English Puritanism*, supporting complete autonomy of individual congregations while advocating the duty of submission

to civil authority. A Lat. version by Ames spread these views abroad. *B.* got into trouble for them, and retired for a time to Derbyshire. Among his numerous publications are: *Humble Motives for Association to Maintain Religion Established*, 1601; *A Consideration of Certain Positions Archi-episcopall*, 1604; *A Protestation of the King's Supremacie: made in the Name of the Afflicted Ministers*, 1605; *A Marriage Feast*, 1620; *An Exposition of the Ninetieth Psalm, and a Sermon*, 1621. See Browne's *History of Congregationalism in Norfolk and Suffolk*, 1877; Gataker's *life in Clark's Martyrology*, 1677; Neal's *History of the Puritans*, i. and ii., 1759; Barclay's *Inner Life of the Religious Societies of the Commonwealth*, 1876.

Bradwardine, Thomas (c. 1290-1349), Eng. archbishop, known for his learning as Doctor Profundus. A native of Sussex, he was educated at Merton College, Oxford, where he rose to be doctor and prof. of divinity, and chancellor of the univ. He became famous as a lecturer and writer, especially against Pelagianism; he was also a mathematician. Having attracted royal notice, he was made chancellor of the London diocese and chaplain to Edward III., whom he accompanied during the Crécy campaign and the siege of Calais. Returning to England he was made prebendary and then archdeacon of Lincoln, and in 1349 archbishop of Canterbury, but *d.* of the Black Death a few weeks later.

Brady, Nicholas (1659-1726), Eng. poet and divine, *b.* at Bandon in Cork, and educated at Westminster School and Christ Church, Oxford. He took orders, and was instrumental during the Protestant revolution in preventing his native tn. from being burnt. He was a staunch upholder of the revolution. Later he settled in London, where he held sev. livings, and here also he *d.* His most famous work was his versification of the Psalms, which he did with the collaboration of Nahum Tate. This was authorised in 1696. He wrote other poetry, a tragedy called *The Rape, or the Innocent Impostors*, and a blank verse translation of the *Æneid*.

Bradycardia, abnormal slowness of the heart-beat. It is a characteristic symptom of Stokes-Adams disease, and may be due to the thickening of the walls of the vertebral and basilar arteries or to degeneration of the muscular fibres transmitting contraction from the auricle to the ventricle. Slowness of heart-beat is also met with in jaundice, melancholia, and certain toxic conditions.

Bradypus, or *AI*, is the 3-toed sloth, an edentate mammal of the family Bradypodidae. It inhabits the forests of S. America. See *SLOTH*.

Braemar, dist. lying along the R. Dee, Aberdeenshire, Scotland, situated in the Grampians. It contains deer forests, and sev. castles and mansions, the chief being Balmoral and Aberfeldie castles, and other royal residences. There are no tns.; the largest vils. are Castleton and Auchindryne, known as Braemar,

and Crathle. In this dist. the rebellion of 1715 broke out under the earl of Mar.

Brag, a game of cards, the interest of which depends on the ability of the player to 'brag' as to the contents of his hand. It is usually played for stakes. It resembles 'post and pair,' a bastard form of prime or poker.

Braga (Rom. *Bracara Augusta*), the third city of Portugal, N.E. of Oporto, has been successively Rom., Gothic, Moorish, Sp., and Portuguese. Its archbishop is primate of Portugal. The cathedral, palace, and city are medieval in appearance, and contain many interesting antiquities. B. has manufs. of firearms, jewellery, and cutlery, and is the centre of a cattle-breeding and dairy-farming dist. Pop. 22,000.

Braga, Theophilo (1843-1924), Portuguese statesman, philosopher, historian, and man of letters, and the first president of the Portuguese Republic. He was b. at Ponta Delgada (Azores) and educated at the univ. of Coimbra, where he became head of a literary school. Later, in 1872, he was appointed prof. of literature in Lisbon. Early in life Senhor B. (whose philosophy was that of Augusto Comte, i.e. Positivist) entered politics, and by virtue of his integrity and ability became leader of the Republican party. He directed the armed rising of this party in Lisbon on Oct. 3 and 4, 1910. Being joined by the fleet in the Tagus and a portion of the garrison (led by non-commissioned officers), the rising was successful; the republic was formally proclaimed on Oct. 5, young King Manuel fled, and the new regime was accepted by the rest of the country. B. was declared president of the provisional gov., a gov. which exercised a dictatorship for 6 months. President B.'s administration was characterised by strong anti-clerical action; the Jesuits were expelled, and clerical property was confiscated. On the adoption of a constitution and the election of a new chamber, B. retired from public life. However, after the troubles of the spring of 1915, when Arraaga resigned on May 27, B. was again called upon, and held the presidency until the election of Machado on Aug. 6. He then finally retired, and d. Feb. 28, 1924. B.'s literary output was voluminous, and includes poems, biography, and hist.—particularly literary hist. Among his better-known works are *Vision of the Ages*, 1864; *Literary Theocracies*, 1865; *The Portuguese People, Their Customs, Beliefs, and Traditions*, 1885; *History of Portuguese Literature*, 1909-14.

Bragança: 1. Episcopal city, cap. of dist. in the N.E. of Portugal. The city consists of 2 parts, one auct. and enclosed by walls, the other modern. It gave its name to the family of Braganza, the former rulers of Portugal, and for sev. centuries of Brazil. Prin. industry, silk-worm rearing and silk manufs. Pop. of tn. 5500; of dist. 213,000. 2. In Pará, Brazil; a seaport on the N.E. coast, about 100 m. E. of the Pará estuary; carried on agric. trade. Pop. 50,000. 3. Tn. in

the prov. of São Paulo, Brazil, centre of coffee-growing dist. Pop. 65,000.

Bragança, or **Braganza**, **House of**. This house was founded by Alfonso, a natural son of the Portuguese king John I., in the earlier half of the fifteenth century, the title being derived from the city of the same name. When Portugal in 1640 threw off the Sp. yoke through a bloodless revolution, the duke of B. became king of Portugal as John IV. In 1807 Napoleon declared the throne empty, and John VI. retired to Brazil until 1821, being succeeded in 1826 by his son Peter, the emperor of Brazil. Peter, however, resigned the crown in favour of his daughter Maria, with whose death in 1853 the main Portuguese branch of the house terminated.

Bragg, Braxton (1817-76), Amer. gen., b. in N. Carolina, trained in the military academy at W. Point, and served in the Seminole and Mexican wars, rising to the rank of lieutenant-col. From 1856 to 1861 he led a civilian life in Louisiana, where he was commissioner of public works. When the Civil war broke out in 1861, he was appointed brig.-gen., and soon after maj.-gen., and served in the Confederate Army of the Mississippi, taking part in the battle of Shiloh, 1862. Soon after that he was placed in command of the W. Army, in succession to Gen. Beauregard, and invaded Kentucky, but was repelled by Buell. Later, he faced Rosenkranz in a long and hard-fought campaign, 1862-63, in which at one time the Northerners were in great straits, but were relieved by Grant, who defeated B. at Chattanooga, Nov. 1863. The latter was now superseded, but acted as military adviser to President Davis until late in 1864, when he took part in the campaign against Sherman, which ended in the surrender of the S. Army. After the war he was appointed chief engineer to the state of Alabama. His death occurred suddenly at Galveston, Texas.

Bragg, Sir William Henry (1862-1942), Eng. physicist, b. at Stonerise Place, Wigton, Cumberland, July 2, son of R. J. Bragg. He was educated at King William College, Isle of Man; and at Trinity College, Cambridge—major scholar, 1882; third wrangler, 1884; first class in Part III. of mathematical tripos, 1885. He was in Australia 1886-1908, prof. of mathematics and physics at Adelaide Univ. He was a member of the council of the S. Australian School of Mines and Industries from 1895, and of the council of the univ. from 1898. Then he was at Leeds Univ. as Cavendish prof., 1909-15; and then Quain prof. of physics, univ. of London, 1915-23. Made F.R.S., 1908. With his son, William Lawrence Bragg, was awarded Nobel prize for physics and Barnard gold medal of Columbia Univ. for work on X-rays and crystals. In 1928 he was appointed president of the Brit. Association, and from 1935 to 1940 he was president of the Royal Society; also director of the Royal Institution. K.B.E., 1920; O.M., 1931. His publications include vols. of lectures, also papers contributed

to the *Philosophical Magazine* and the *Transactions* of the Royal Society. D. March 13.

Bragi, in N. mythology a son of Odin and Freyja; god of wisdom, poetry, and eloquence which after him received the name of *bragur*. As wife he had Iðunn, goddess of eternal youth. It is B. who receives the slain heroes on their entry into Valhalla. At festivals, horns were drunk in his honour.

Braham, John (1777-1856), Eng. tenor, b. in London, of Jewish family, his real name being Abraham. He first sang in public when only 10 years old. When his voice broke, he supported himself by pianoforte teaching, but after 2 years' voice training under Rauzzini at Bath, he reappeared at Drury Lane in 1796, in an opera by Storace, and many engagements were offered him. But the desire for further experience and study took him to France and Italy, where he had a long series of triumphs. Returning home in 1801, he was received with enthusiasm, and thenceforth reigned supreme in concert, oratorio, and opera. He wrote many songs, which had no great merit, but to which his singing gave wide popularity. One of them, *The Death of Nelson*, is still well known. His singing was remarkable for intense expression; Lamb speaks of this in one of his essays (*Imperfect Sympathies*).

Brahé, Tycho (1546-1601), Dan. astronomer, b. at Knudstrup on Dec. 14, of aristocratic parentage, and educated at the univ. of Copenhagen. He commenced to study the law, but his interest in astronomy was roused by the total eclipse of the sun which occurred on Aug. 21, 1560, and from that time forward he devoted himself to this science, becoming the greatest astronomer of his day. His first achievement was the radical correction of the Alphonsine and Prutonic tables (*qq.v.*). This was while he was at Leipzig, and at Augsburg, on the evening of Nov. 11, 1572, he discovered a new star in the constellation of Cassiopeia. (Some say he made the discovery at Knudstrup in 1571.) The star gradually diminished in brightness, but at the time of its discovery by Tycho it was as bright as Venus. This discovery brought fame to Tycho, and after further wanderings in Germany and Switzerland, King Frederick II. of Denmark undertook the building, equipment, and maintenance of an observatory to enable Tycho to prosecute his astronomical labours. On the is. of Hven, or Hveen, was erected an 'astronomical castle,' called Uraniborg (city of the heavens), and an observatory was sunk in the ground named Stællborg (city of the stars). This was in 1576, and from that time till 1596 Tycho, under the protection of Frederick and his son, Christian IV., conducted a long series of painstaking observations, and enunciated the Tychoonic system of planetary motions, a system which sought to reconcile the old Ptolemaic and new Copernican systems. While here, Tycho was visited by many notable persons, including James VI. of Scotland (afterwards James I. of England), who wrote

a poem in his honour. In 1596 B., who had ever been an object of the dislike of the majority of the members of his aristocratic caste, was deprived of his appointments and of King Christian's protection, and had to abandon his loved Uraniborg. In the summer of the next year he left Denmark with his wife and family, and at the end of 1598, in response to the pressing invitation of the Emperor Rudolph II., he estab. himself and his instruments at Benatky, near Prague in Bohemia. Here he was joined by the celebrated Kepler in Feb. 1600, and they laboured together till Tycho d., Oct. 24, 1601. Not the least among his many claims to immortality is the fact that with his observations, and acting on his advice, Kepler discovered his great laws of astronomical motion. How thorough and accurate Tycho's observations were may be better appreciated when it is remembered that he d. just prior to the invention of the telescope. See also ASTRONOMY. See J. L. E. Dreyer, *Tycho Brahé: Scientific Life in the Sixteenth Century*, 1890; H. Macpherson, *Makers of Astronomy*, 1933.

Brahilov, see BRAILA.

Brahma and Brahmanism. Brahma is the supreme being of the Hindu pantheon. He has 3 manifestations: Brahmā, Vishnu, and Siva, but, strictly speaking, all the other gods are merely manifestations of him, and were supposed to originate in him. Thus we read in the *Atharva-Veda*, 'All the gods are in Brahma as cows in a cow-house.' The other gods only achieved immortality when they were pervaded by him. He is, in fact, the generative power of the whole universe. His name is derived from the root *brīh*, 'to expand,' and he denotes the universally diffused substance of life and created energy. Brahma in the neuter is simple, infinite being; when it passes into actual manifested existence it is called Brahmā; when it achieves world-growth it is termed Vishnu; and when it once more returns into simple being, Siva. All the other deities are merely manifestations of the neuter, Brahman. The fundamental doctrines of the Hindu religion gather round the Brahman caste, and Brahmanism is practically interchangeable as a phrase with Hinduism. But the Brahmans are recognised as the highest caste in the Hindu religion—the caste of priests of the highest rank. In its ranks ceremonial purity and social exclusiveness are regarded as first essentials. Brahmanism is not a body of theological dogmas, but an hereditary system of customary observances. See INDIA.

Brahmanabad, ruined city N.E. of Hyderabad, India. It stood on an anct. course of the Indus, and its fortifications were 4½ m. in perimeter. Excavations have shown that everything is still *in situ*, as at Pompeii, so that probably the city was destroyed by some catastrophe which also changed the course of the riv. Tradition declares that the gods destroyed it to punish the wickedness of a King Dolora, whose name occurs in the annals of 9 centuries ago.

Brahmanas, second of the 3 grand divs. of Vedic literature, being prose commentaries describing the ritual to be observed in sacrifices and worship by Brahmans. The oldest probably belong to about the seventh century B.C. The most important are *Aitareya Brahmana*, attached to the Rigveda; *Chandogya Brahmana*, belonging to the Samaveda; and *Salapatha Brahmana*, belonging to the White Yajurveda.

Brahmani, riv. of Bengal, India; it flows through Chota Nagpur and Orissa into the delta of the Mahanadi, N. of Cuttack. It is famous in anct. Hindu mythology in connection with the story of Parāsara.

Brahmans, name given to the priests who form the first of the 4 great castes among the Hindus; they are the teachers of the doctrines of the Vedas.

Brahmaputra, riv. rising on the N. side of the Himalayas, in Tibet, about 100 m. from the source of the Indus. After flowing along the N. of the range for over 800 m., during which it receives many tribs, both from N. and S., it turns southward, and after a long course through almost unknown mt. ranges, during which it has a fall of 7000 ft., it emerges into Assam. In Tibet it is generally known as the Tsangpo, in Assam it is called the Dihang. In Assam it is joined by large tribs., and thence flows down to the bay of Bengal. It has a total length of 1800 m., and is navigable up to Dibrugarh, 800 m. from the sea.

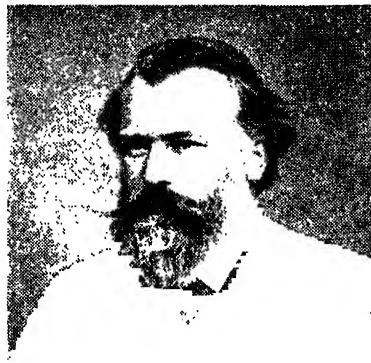
Brahma Samaj, Theistic Church in India, owes its origin to Mohan Roy Ram, one of the greatest men India has produced. He was b. in 1772 in the dist. of Baidwan, and mastered at an early age the Sanskrit, Arabic, and Persian languages. Having discovered the fallacies of the religious ceremonies practised by his countrymen, he impartially investigated the Hindu Shastras, the Koran, and the Bible, repudiated the polytheistic worship of the Shastras, and inculcated the reformed principles of monotheism as found in anct. Upanishads of the Vedas. He founded a society in 1816 consisting of Hindus. Texts were read and theistic hymns were chanted, but this society soon died away owing to the antagonism of the Hindus. In 1830 the raja organised a Hindu society for prayer meetings, which may be considered as the foundation of the present B. S. The groundwork of their faith was 'The worship of the eternal and immutable Being, who is the author and preserver of the universe, but not under and by any other name, designation, or title, peculiarly used for any particular being or beings by any man or set of men whatsoever.' The basis of the new faith was the Vedas. Soon after Mohan Roy Ram set sail for England, and took up residence at Bristol, where he d. in 1833. The B. S. maintained a bare existence until 1841, when Babu Debendra Nath Tagore, head of a well-known Calcutta family, devoted himself to it. He gave a printing press to the Samaj, and estab. a monthly jour. known as the *Tattvabodhini Patrika*.

About 1850 a schism took place on account of the discovery that the greater part of the Vedas was polytheistic. The advanced party had nature and intuition as the groundwork of their faith. Branch societies were founded in different parts of India, especially in Bengal, and the new church made rapid progress. Some of the articles of the B. S. creed may be tabulated as follows: (1) The book of nature and intuition supplies the basis of religious faith. (2) Although the Brahmas do not consider any book written by man as the basis of their faith, yet they do accept with respect and pleasure any religious *truth* contained in any book. (3) The Brahmas believe that the fundamental doctrines of their religion are also the basis of every true religion. (4) They believe in the existence of one supreme Being or God—a God endowed with a distinct personality, moral attributes worthy of his nature, and an intelligence befitting the governor of the universe, and they worship him alone. They do not believe in any one of his incarnations. 5. They believe that the religious condition of man is progressive like the other departments of his condition in this world. 6. They believe in the immortality and progressive state of the soul, and declare that there is a state of conscious existence succeeding life in this world, and supplementary to it as regards the action of the universal moral gov. The B. S. Church numbers about 3000, and considerable progress is being made. There is a fine chapel in Calcutta. See ARYA SAMAJ.

Brahmin, or **Brahmin Ox**, see ZEBU.

Brahms, Johannes (1833–97), Ger. composer, b. in Hamburg on May 7. He received his first music lessons from his father, studying afterwards under Marxsen of Altona. He appeared in public as a pianist at the age of 15, but continued his studies and composition without ceasing until 1853, when he went on a concert tour with Reményi, the Hungarian violinist. During this tour he made the acquaintance of Joachim, who recognising his genius became his friend, and gave him letters of introduction to Liszt and Schumann, who both appreciated his work, the latter proclaiming him to be 'the coming composer,' although up to that time he had pub. few important works. In 1857 he was made director of the court concerts and choral society at Detmold; this appointment he held for 4 years, with plenty of leisure for study and composition. In Jan. 1859, at the Leipzig Gewandhaus, he produced his piano concerto in D minor, a work so new and opposed to convention that at first it was a failure, but, played by Clara Schumann and others, it gradually won favour throughout Germany. In 1860 B. went to Winterthur, and in 1862 to Vienna, which became his permanent residence. He d. there on Apr. 3, 1897. Though his music was thoroughly classical in spirit, yet its form and treatment were so individual and presented so many new and difficult problems that he was not generally understood or appreciated for many years. He refused to write opera,

the nearest approach to it being his cantata *Rinaldo*. Only 2 of his leading compositions were inspired from without—the *Deutsches Requiem* by the death of his mother in 1865, and the *Triumphlied* by the Ger. victories of 1870–71. Many of his works were produced in pairs having some resemblance in form and expression; this is shown especially in his 1st and 2nd, and 3rd and 4th symphonies. His numbered works amount to 122, and the collections and studies without opus number fill sev. more vols. The greatest of Ger. composers of the seventies and



JOHANNES BRAHMS

E.N.A.

eighties, B. rejected opera, music-drama, and programme music, regarding himself as the champion of classicism. Yet in his songs, chamber music, and symphonies he is a romanticist and the true successor of Schumann. In the earlier part of his career he wrote chiefly chamber music, and his first and second quartets for strings and piano are among the most exhilarating chamber compositions in the repertory. B.'s sacred music (such as his *Requiem*) is full of restrained power, shown alike in the treatment of chorus and orchestra. Seldom passionate, B. abounds in sincere sentiment; he is often sombre, but never gloomy; he is rich in intellectual vigour, and almost always inspired. In any one of his symphonic movements all these moods are blended into a coherent artistic unity.

See M. Kalbeck, *Brahms* (Vienna, 1904; *Brahms: the Herzogenberg Correspondence* (Eng. translation), 1909; J. A. Fuller-Maitland, *Brahms*, 1911; E.

Evans, *Historical, Descriptive, and Analytical Account of the Entire Works of Johannes Brahms*, 4 vols., 1912–36; also studies by W. Murdoch (1933), C. Geiringer (1936), and P. Latham (1948).

Brahui, one of the races of Baluchistan. The Bs. are generally regarded as aboriginals, and they certainly occupied the country before the Baluchis, who have driven them into the mts., where they now live a nomadic life.

Braid, James (1795–1860), Scottish surgeon, b. at Fife. His education in medicine was undertaken at Edinburgh. On the completion of his studies he practised as a surgeon in Manchester till his death. His reputation depends upon his work in connection with animal magnetism.

Braidwood, tn. in New S. Wales, Australia, situated in the co. of St. Vincent, 50 m. S. of Goulburn.

Braidwood, Thomas (1715–1806), Scottish educationist; educated at Edinburgh univ. He became a school teacher, and in 1760 opened at Edinburgh a school for the deaf and dumb, following the system of Dr. John Wallis. His school was successful, but was regarded very much as a curiosity rather than an educational reform. It was visited in 1773 by Dr. Johnson. B. later came to London, where he d.

Brăila, or **Brahilov**, port of Rumania on the lower Danube; active industry and a chief outlet for Rumanian wheat. The grain wharves have a capacity of 300,000 tons, and prior to 1939 the harbour handles some 1,000,000 tons annually; there is steam communication with Constantinople. B. was captured by the Gers. in 1916. In the Second World War it was captured by the Russians on Sept. 2, 1944. Pop. 97,200.

Braille Type, see under BLIND.

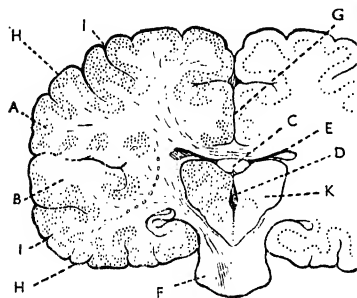
Brain, that part of the nervous system which is enclosed within the cranium. The nervous system of the human body may be divided into 2 parts: 1. The lymphatic nervous system, consisting of nervous matter bound together by nervous cords and placed on either side of the vertebral column; 2. the cerebro-spinal nervous system, consisting of the B. and the spinal cord, which are continuous with each other. The systems are connected intimately with each other and together serve to co-ordinate the various parts of the body into a harmonious whole, all the functions of every part, whether exercised consciously or not, being dependent upon the proper action of the nervous system. The B. is composed of 2 substances, which are called white matter and grey matter, the former being chiefly made up of *nerve fibres* and the latter of *nerve cells*, which give rise to nerve fibre. Both kinds of matter lie in a matrix called the *neuroglia*, which therefore constitutes the supporting tissue of the B. matter. Nerve fibres are the conducting elements of the nervous system; the fibre consists of an axis-cylinder which is in many cases coated more or less thickly by a fatty substance called *myelin*. The nerve cells of the grey matter consist of protoplasmic

nuclei from which certain processes proceed. The axis-cylinder process is in reality a nerve fibre, and the dendrites, or protoplasmic processes, branch out into a complexity of filaments, growing more and more attenuated as they proceed away from the nerve cell. The B. is surrounded by 3 membranes or *meninges* termed the *dura mater*, the *arachnoid mater*, and the *pia mater*. The *dura mater* is a dense fibrous membrane which adheres to the inner surface of the skull, and serves both as a feeding membrane for the bone and as an envelope for the B. The *arachnoid mater* is a thin and transparent membrane, separated from the *dura mater* by a minute quantity of fluid and from the *pia mater* by a space containing the cerebro-spinal fluid. The *pia mater* is a delicate membrane which follows the inequalities of the B. surface, dipping into all the fissures, and carrying the finer blood-vessels which proceed into the substance of the B. The B. itself, when viewed from above, presents an ovoid, or egg-like appearance. The parts then visible are the 2 cerebral hemispheres, separated by a groove from front to back called the *great longitudinal fissure*. Viewed from below, a short cylindrical portion at the rear communicates with the spinal cord. This is called the bulb or *medulla oblongata*, while above it but close to it is a white prominence called the *pons Varolii*. The closely packed mass at the rear is called the *cerebellum*. *Medulla oblongata* is the continuation upwards of the spinal cord. It is about 1½ in. long and 1 in. broad. At first its girth is the same as the cord; it becomes bilateral by shallow grooves anteriorly and posteriorly. As it thickens the anterior groove is crossed by bundles of nerves from each side, the formation being called the *decussation of the pyramids*. The groove is carried upwards to the pyramid, which expands up to the lower border of the *pons Varolii*, then becoming constricted as it disappears into the *pons*. Viewed from the side, the most prominent feature is the *olivary eminence*, about ½ in. long, which marks the position of an underlying nucleus of grey matter. From behind, 2 swellings run parallel to the medial groove on each side. The inner one is called the *funiculus gracilis*, and the outer the *funiculus cuneatus*. The form ends in a prominence called the *clava*. The upper portion of the posterior area is occupied by the *restiform body*, a rope-like strand which links the medulla to the cerebellum. The medulla is composed of white matter on the surface and grey matter in the interior. The grey matter is, however, much broken up by fibres traversing it in all directions, thus constituting the *formatio reticularis*. The *pons Varolii* is a white prominence lying in front of the cerebellum. It consists of 2 parts: 1. The ventral or anterior portion, which corresponds to the pyramid of the medulla oblongata which disappears into it, and the feet of the *crura cerebri* which appear to rise out of it; 2. The dorsal portion, which represents a continuation upwards of the *formatio reticularis*. The ventral

part is made up of longitudinal and transverse fibres and the dorsal portion principally of grey matter. The *cerebellum*, or little B., lies behind the *pons Varolii* and the *medulla oblongata* and below the hinder part of the cerebrum. In front and behind there are medial notches which divide the lateral hemispheres. At the bottom of the notches appear a medial lobe which is called the *vermis*. A deep horizontal fissure divides the cerebellum into an upper and a lower portion. The upper surface is divided from before backwards into the lingula, the central lobule, the culmen monticuli, the clivus monticuli, and the folium cacuminis. These divs. cross both hemispheres and the vermis. On the under surface the vermis is divided from behind forwards into the tuber valvulae, the pyramid, the uvula, and the nodule. The hemispheres are divided from behind forwards into the postero-inferior lobule, the biventral lobule, and the tonsil or amygdala. The cerebellum consists of a central mass of white matter covered by a continuous layer of grey matter. The *cerebrum*, or great B., occupies the upper portion of the skull from front to back. It is connected with the parts that lie below by the *mesencephalon*, or mid B., about 1 in. long. It consists of a dorsal part made up of the *corpora quadrigemina*, and a ventral part composed of the *crura cerebri*, 2 rope-like strands, apparently emerging from the *pons Varolii*. In the interior is a canal called the *aqueduct of Sylvius*, leading from the fourth ventricle below to the third ventricle above. The cerebrum itself is divided from the cerebellum by a membrane called the *tentorium*. A deep longitudinal fissure divides it into 2 hemispheres, which are united below by a band of white matter, the *corpus callosum*. The surface of each hemisphere consists of grey matter and exhibits convolutions or *gyri*, separated from each other by depressions or *sulci*. In each hemisphere there are 5 lobes: the frontal, parietal, occipital, temporosphenoid, and central, or is. of Reil. The grey matter on the outside, or *cortex*, extends to a thickness varying from 2.5 mm. to 6 mm. The interior is composed of white matter, but there are certain deposits of grey matter embedded in the basal part of each hemisphere. These are called the *corpus striatum*.

Functions of the Brain.—The B. in man constitutes the main portion of the central nervous system, which acts, as it were, as an exchange, co-ordinating the different nervous impulses, translating the effects of a stimulus into action, and, as far as we know, into thought. 'Physiology has nothing to do with what the psychologists call consciousness, except indirectly. The ways in which ideas are formed, memories linked and stored, are the concern of psychology, and no satisfactory parallelism has yet been estab. between psychological phenomena and physiological facts. Sensation, however, may be translated physically as well as psychically, and a certain amount of localisation of function in the B. has been demonstrated as regards

sensation and movement. The peripheral nervous system consists of threads of nervous matter which penetrate into the remote parts of the body. Some of these nerves serve to transmit impulses from their source to some central ganglion, or nervous mass, whence impulses are again sent forth to glands and muscles, resulting in secretions and movements. The nerves which carry the impulses to the central nerve-mass are called afferent nerves, and those which carry the departing impulses, efferent nerves. When these nervous messages are carried to the lower nerve centres, the result is a bodily movement which has no direct relation to the state of consciousness. That is to say, they are reflex actions, which in general operate without causing sensation. With respect



VERTICAL CROSS SECTION THROUGH THE BRAIN

A, cortex, grey matter of the cerebral hemisphere; B, white matter of the cerebral hemisphere; C, fornix; D, third ventricle; E, lateral ventricle; F, pons Varolii, cut obliquely and showing fibres running from it and forming the crura cerebri; G, median fissure; H, convolutions (gyri); I, fissures (sulci); K, optic thalamus.

to many nervous impulses, however, a change in consciousness does take place. The impulses which come from the stimulation of the highly differentiated systems of nerve endings in the organs of sight, hearing, touch, taste, etc., cause particular phenomena which are usually referred to under the psychological terms of sensation. The efferent nerves then carry away impulses which may have no obvious relation to the impulse from the periphery. That is to say, a highly complex process seems to have been gone through which, in the language of psychology, we call thought. Whatever may be the particular nature of the nervous movements interposed between a mass of incoming nervous impulses and the subsequent departing impulses, it is fairly certain that the seat of those movements is the complex mass of fibres and nerve cells which we call the cortex of the fore-brain. When this portion of the B. has been removed from animals, it has been found that they have no power of co-ordinating movements. Certain stimuli may still

bring about appropriate reactions, but they do so invariably and without any adjustment to other circumstances. Now there are certain actions which are performed as reflexes, such as coughing, sneezing, breathing, and the actions of the internal muscles. Many of these, however, can be brought under control if necessity arises, e.g. a cough or a sneeze may be checked. With the fore-brain removed such reflexes are not checked, but occur more regularly and certainly than under normal conditions. Many attempts have been made to connect various portions of the cortex with appropriate differences of function. One of the most interesting was the doctrine of phrenology, which sought to connect the various areas with so-called 'faculties,' such as music, love of humanity, etc. The complex nature of such 'faculties' is sufficient to condemn the hypothesis. On the other hand, experiment and observation have enabled us to connect certain areas with stimuli arriving from the eyes, the olfactory nerves, and the ear. There are also regions which seem to be intimately connected with movements of the leg, arm, tongue, mouth, neck, and body. Electrical stimuli applied to the appropriate point in the B. have been found to produce motions in the particular parts of the body associated with them. In general, it may be remarked that knowledge of the special functions of different parts of the B. is very scanty, and that though such knowledge has been of great use in localising injuries, etc., it has thrown no particular light on the general problem of the connection between mind and matter.

Brain Diseases.—These may be the result of injury or organic disease; or, on the other hand, functional disturbances, whose causes may or may not be traced to a physical source. Concussion of the B. results from a blow on the head or a fall from a height. The symptoms may range from a feeling of giddiness to complete insensibility. Vomiting accompanies a return to consciousness, and there may be subsequent disturbance of the normal functions of the B., e.g. lapses of memory. A severe blow may cause a fracture of the skull, and there is then danger of infection from micro-organisms as well as concussion. Tumours of the B. may occur as the result of tuberculous or syphilitic matter brought with the blood-stream, or may be cancerous in their nature. The B. is of course likely to suffer if the blood stream is in any way abnormal. If the supply of blood is too small, syncope or fainting results. If one portion of the B. is cut off from the blood supply by plugging up of the artery or other causes, it gradually undergoes softening as a result of malnutrition. The general effect of a deficiency of oxygen is lassitude and feebleness, while too great a quantity of carbon dioxide produces drowsiness and eventually causes convulsions. Poisons find their way to the B. in the blood stream. Some of these are produced by disturbed secretions in some other part of the body, and

result in auto-intoxication, a condition which reacts strongly upon the state of consciousness. Alcohol and other drugs produce characteristic mental phenomena, and the result of lead-poisoning on the B. is to lead to loss of memory and general mental feebleness. Micro-organisms may be carried to the B., causing delirium and meningitis, or inflammation of the B. membranes. The B. carries on its work by the aid of nutrient matter carried by the blood, and any over-stimulation or excessive exercise of its functions without proper rest and food produces weariness and headache, and may encourage or promote the development of morbid growths which will result in paralysis or mania. This excessive functioning may be supplied by worry, shock, overwork, or violent emotions, stimuli constantly repeated without adequate intervals for rest or stimuli too great in intensity.

Bibliography.—C. Buttar, *The Anatomy of the Brain and Nervous System; The Physiology of the Brain and Nervous System*, 1914; J. S. Bolton, *The Brain in Health and Disease*, 1914; F. Krause, *Die allgemeine Chirurgie der Gehirnkrankheiten*, 1914; W. R. Bell, *The Pituitary* (morphology and surgical treatment), 1919; W. Sharpe, *Diagnosis and Treatment of Brain Injuries*, 1920; J. R. Whitaker, *Anatomy of the Brain and Spinal Cord*, 1921; W. P. Eakleton, *Brain Abscess: its Surgical Pathology and Operative Technique*, 1922; H. Piéron, *Le Cerveau et la pensée*, 1923; B. Hollander, *Brain and Intelligence*, 1925; E. Volzinger, *Brain and Spinal Cord* (Philadelphia) (4th ed.), 1931; E. Sachs, *The Diagnosis and Treatment of Brain Tumours*, 1931; B. Hollander, *Brain, Mind, and the External Signs of Intelligence*, 1931; W. Russell and E. B. Strauss, *Recent Advances in Neurology* (3rd ed.), 1934; E. Miles Atkinson, *Abscess of Brain: its Pathology, Diagnosis, and Treatment*, 1934; J. H. Globus, *Neuroanatomy: the Form and Internal Structure of the Brain and Spinal Cord* (4th ed.), 1934; F. and F. Wertham, *The Brain as an Organ: its Postmortem Study and Interpretation*, 1935; I. H. Page, *Chemistry of the Brain*, 1938; R. Bing, *Compendium of Regional Diagnosis in Lesions of the Brain and Spinal Cord* (trans.) (11th ed.), 1940.

Brainard, John Gardine Calkins (1796–1828), Amer. poet, b. and d. at New London, Connecticut. Whittier ed. his *Remains* (1832).

Brain Coral, coral of the *Astreidae* species, to be found growing plentifully in the W. Indian Ocean. It grows at a slow rate.

Braine-l'Alleud, tn. in Brabant, Belgium, manufs. glass and cotton. Wellington's extreme right was posted here at the battle of Waterloo. Pop. 10,500.

Braine-le-Comte, tn. in the prov. of Hainaut, Belgium, on the Seine. It has cotton mills, dye-works, and breweries, and specialises in the production of flax. Pop. 10,000.

Brainerd, co. seat of Crow Wing co., Minnesota, U.S.A. It is situated on the banks of the Mississippi, in the centre of

the state, and at a junction of the N. Pacific railway. Pop. 11,000.

Brainerd, David (1718–47), b. at Connecticut. Educated at Yale College, he was expelled for a statement concerning the religion of one of the masters. He began his missionary duties to the Massachusetts Indians in the same year (1742). He met with the greatest success at New Jersey. He d. after the publication of his *Mirabilia Dei inter Indicos*, and *Grace Displayed*.

Brains Trust, popular name given to any group of experts who meet together for the purpose of giving information on any subject put to them or finding authoritative answers to current problems. The term 'Brain Trust' was first used to designate a group of expert advisers, chosen from academic life, who assisted President Franklin Roosevelt in his campaign for the presidential elections in 1932, and later in the formulation of the 'New Deal.' Raymond Moley, Rexford Tugwell, and J. J. Berle, all of Columbia Univ., were prominent members of the original B. T., and were later joined, among others, by G. F. Warren, F. A. Pearson, and W. I. Myers, economists of Cornell Univ. The term gained further currency as the title of a broadcast programme inaugurated by the Brit. Broadcasting Corporation on Jan. 1, 1941, at first under the title of 'Any Questions?' and continued weekly for the greater part of each year subsequently. The original team of experts consisted of Dr. Julian Huxley, Prof. C. E. M. Joad, and Commander A. B. Campbell, with Donald McCullough as question-master, whose function was to put to the B. T. the questions which had been submitted by members of the public. The questions were not previously made known to the B. T. and the answers were impromptu. In the first year of its existence the B.B.C. received 90,000 questions, of which 400 were dealt with by the B. T. The juxtaposition of the personalities of those involved, the interchange of ideas, and the display of knowledge presented with a mixture of wit and erudition gave the broadcast a regular audience of some 10 million listeners.

Braintree, tn. of Essex, England, noted for its manufs. of silk, crêpe, malt, and beer. It has iron foundries and extensive breweries. As a mkt. tn. it has some reputation. There is an anct. church (St. Michael) of 1350. Pop. 9000.

Braintree, tn. in Norfolk co., Massachusetts, U.S.A., 10 m. S.S.E. of Boston. Granite is found in the neighbourhood, and its preparation finds employment for most of the inhab. Its only other claim to note is the fact that it was the bp. of John Adams, the second president of the U.S.A. Pop. 16,000.

Braithwaite, John (1797–1870), Eng. engineer. He ventilated the House of Lords by air-pumps, 1820; devised the donkey engine, 1822. He cast the statue of the duke of Kent, which was set up in Portland Place. B. constructed the first practical steam fire-engine, and with Ericsson built for the Stephensons the

locomotive engine 'Novelty,' the first to run a mile a minute, 1829. With Vignoles he projected and laid out E. Cos. railway, 1836-43. He and Ericsson fitted a canal boat with screw propeller. This went from London to Manchester by means of canals, and back by the Thames. With Robertson he was joint founder of the *Railway Times*, 1837. He became F.S.A. in 1819; M.I.C.E. in 1838. Wrote *Supplement to Capt. Sir John Ross's Narrative of a Second Voyage in Search of a North-West Passage*. See *Mechanic's Magazine*, xii., 1830, and *Minutes of Proceedings of Institution of Civil Engineers*, xxvi., 1871.

Braithwaite, Lillian (Mrs. Gerald Lawrence) (1873-1948), Eng. actress, b. at Ramsgate, daughter of J. M. B., vicar of Croydon, and educated at the high schools of Croydon and Hampstead, and in Dresden. Minor parts in Benson's season at the Comedy Theatre in 1901 were followed by a tour with George Alexander, who engaged her for the St. James's Theatre. There she acted in Esmond's *The Wilderness* and Stephen Phillips's *Paolo and Francesca*, establishing her reputation in W.-end comedy. Took the part of Ethel Newcome in Tree's production of *Colonel Newcome* in 1906. In 1908 she acted with Cyril Maude in *The Flag Lieutenant* and, in 1913, with Matheson Lang in *Mr. Wu*. Among her outstanding parts were those of Mrs. Errol, the innocent young widowed mother in *Little Lord Fauntleroy* (1914), the vacillating wife in Clemence Dane's *A Bill of Divorcement* in 1921, the parasitic mother in Mr. Sidney Howard's *The Silver Cord*, and as one of the old sisters in the very successful play *Arsenic and Old Lace* (1942-46). Though she occasionally returned to Shakespeare, e.g. as Portia in *The Merchant of Venice* (1916), and as Virginia, the appealing wife of Coriolanus, most of her long succession of roles were in modern comedy, in which her dominant quality of womanly sweetness found full expression and no little variety. Also acted for the cinema. D.B.E., 1943.

Brake, see BRACKEN.

Brake, appliance to stop or retard the motion of a body by the use of a resistance which absorbs part of the energy of the body, also spelled 'break.' The need for contrivances for controlling the speed of machinery of all kinds has led to the invention of many kinds of Bs. Of the simpler types in common use mention may be made of the block B., the slipper B., and the band B. The block B. consists in its simplest form of a block of wood which, on being pressed against the rim of a wheel, retards its motion. In the case of the ordinary wagon the power is applied by the foot of the driver pressing on a treadle which is connected by a system of levers to the brake-block. In the case of heavier wagons, such as those attached to traction engines, the power is applied by means of a wheel and screw. The slipper B. is commonly used on heavy vehicles when descending hills, and consists of a metal skid or slipper into which one of the wheels fits, and is thus pre-

vented from revolving. The increased friction due to the sliding of the wheel tends to arrest the motion of the vehicle. The band B. is used in the case of machines such as winches and cranes, and consists of a band passing round a circular drum fixed to the shafting of the machine. On tightening the band the friction exerted on the revolving drum retards the motion of the machine. In the *hydraulic B.* the retarding force is the pressure exerted by the water in a cylinder from which its escape can be regulated. This type of B. is used in elevators and other machines worked by hydraulic power. Electric Bs. are now much used on electric tramway systems. When a tramway car is travelling at high speed, and the current is cut off, the momentum of the car drives the motors as dynamos and thus produces a current which is made to excite electro-magnets to which are connected metal shoes. The metal shoes becoming magnetised are attracted to the metal rails above which they are fixed, and the friction between shoe-pieces and rails retards the motion of the car.

Railway Bs.—The high speeds attained on modern railways have necessitated the construction of extremely powerful Bs. Originally the form of B. employed was similar to that used on horsed vehicles, and consisted of wooden shoe-blocks which were pressed against the wheels of the tender by means of levers and a wheel and screw operated by the brakeman. A form of B. operated by a chain passing the whole length of the train was formerly in use, and was the first B. invented to be continuous in its action. In the case of the 'clip' B. the resistance is applied by causing the 2 sides of an iron clip to grip the rail. Passenger trains are usually operated at 20-in. vacuum, but a few railways use 24-in. vacuum, and freight trains 20-inch, or 16-inch on long trains, where the high vacuum is difficult to maintain. B. cylinders are either of the combined type, with the vacuum chamber forming the outer casing of the cylinder, or separate type with an independent vacuum chamber. In the former case, the cylinder is connected to the B. pipe by a single branch valve, and in the latter case a double branch is used, the second branch connecting the vacuum space above the piston with an independent vacuum chamber.

Westinghouse Bs.—It is essential that a B. for use on a modern railway train should be continuous, automatic, and quick in action; the use of such a B. is in fact enforced by law. Unless a B. can be continuously applied throughout the length of the train collisions between the rear and front carriages will occur when the latter are suddenly brought to a stop. Moreover, it is evident that a B. which can be caused to act on the wheels of each vehicle is much more powerful than one which only operates on those of the end cars. It is necessary for the B. to be automatic in order that it may at once come into action should an accident such as the uncoupling and

breaking away of a coach occur. The modern Westinghouse Bs. possess all these essential qualities. The 2 kinds at present in use are the air-pressure B. and the vacuum B. In both types the Bs. are applied by air pressure, regulated by means of a train-pipe which runs the whole length of the train. In the case of a coach becoming accidentally uncoupled the resulting rupture of the train-pipe causes an alteration of the air pressure, which automatically causes the Bs. to be applied. The original form of air-B., invented in 1869 by George Westinghouse, and called the 'straight' air-B., is not automatic in its action. The arrangement of the mechanism is as follows: A supply of compressed air is stored beneath the cab of the engine by means of an air-pump, the piston of which is connected to the piston-rod of a steam cylinder, and which can thus compress the air to any required pressure. The train-pipe in connection with this reservoir is an iron pipe running the whole length of the train, the junctions between the coaches being made of rubber hose. Underneath each coach is fixed a B. cylinder, into which compressed air from the train-pipe can be discharged, resulting in motion of the piston, which operates by means of levers the B. blocks on the wheels. The engine driver operates the B. by means of a 3-way cock, which communicates with the train-pipe on one side and the compressed air reservoir on the other. To apply the B. compressed air is allowed to pass into the train-pipe, whence it enters the B. cylinders, forces out the pistons, and hence causes the application of the B.-blocks to an extent under the control of the engineer operating the valve. A further turn of the 3-way cock keeps the air in the B. cylinders fixed at the required pressure. The B. may be released by operating the valve so that communication is estab. between the train-pipe and the atmosphere. It is thus possible to keep the application of the B.-blocks well under control. The fact that this B. is not automatic in its action has led to its being superseded by an automatic type.

Westinghouse Automatic Air-B.—This modification of the original appliance was invented by Westinghouse in 1879. Compressed air is stored by means of a pump on the engine at a pressure of about 80 lb. per sq. in. This reservoir is in connection with a train-pipe which is similar to that used in the 'straight' air B. Under each vehicle, however, is placed a small air reservoir and a piece of mechanism called a triple valve which controls the admission of air to the B. cylinder, and it is these additions which render the B. automatic. In the triple valve is a small cylinder and piston which will be caused to move by any alteration in the pressure of the air in the train-pipe. Since the movement of this piston determines the admission of air from the storage cylinder to the B. cylinder, it will be seen that the action of the B. is affected by variations in the pressure of the air in the train-pipe. The latter is in

turn regulated by the valve in the engine cab connecting with the large reservoir of compressed air. Under normal conditions the triple valve closes the communication between the B. cylinder and air reservoir, and hence keeps the B. out of action. To apply the B. the air pressure in the train-pipe is reduced by the driver at one end of the train or the guard at the other operating a valve. The reduction of pressure in the triple valve causes a motion of the small piston in the valve, which results in the opening of the top port. This causes some of the compressed air to enter the B. cylinder, resulting in motion of the piston which operates the Bs. When the air pressure in the auxiliary air chamber has become less than that in the train-pipe the air in the B. cylinder is automatically shut in, and the pressure of the B. shoes on the wheels is sustained. It will thus be seen that the power with which the B. is applied depends upon the extent to which the pressure in the train-pipe is reduced. To release the Bs. the engineer operates a valve whereby the train-pipe is again put into communication with the main reservoir of compressed air underneath the engine cab. The increased pressure in the triple valve causes a motion of the valve-piston which results in the compressed air in the B. cylinder being allowed to escape into the atmosphere. The resulting motion of the pistons releases the B., while at the same time the air from the train-pipe is enabled to pass into the auxiliary storage chamber and to recharge it ready for another application of the Bs. Now if through the accidental breaking of a coupling or some other cause one of the junctions of the train-pipe is ruptured, the air pressure within the pipe will be reduced to atmospheric pressure, the triple valve will operate as above, and the Bs. will be automatically applied, bringing the coaches to a standstill. Moreover, if part of the apparatus becomes defective, resulting in a leakage of the compressed air, attention is at once called to this by the automatic application of the Bs. The triple valve has been greatly improved by a modification of its mechanism, which enables the application of the B. to be much more sudden. The *quick-acting valve*, as it is called, is of great use in the case of an emergency when it is required to bring the train to a standstill in the least possible time. In this improved arrangement, when a large reduction is made in the air pressure in the train-pipe, the escaping air is vented straight into the B. chamber. The venting of the train-pipe under each coach is greatly accelerated, with the result that the B.-blocks are applied nearly simultaneously throughout the length of the train. This not only results in increased power, but also avoids the jolting caused by one part of the train slowing down before another.

Westinghouse Automatic B. Improved Triple Valve.—A valve which gives a closer approach to simultaneous action to all the triple valves in a train than

most previous designs. A further improvement, also making for smooth and even action, consists of a removable plug, perforated with a series of holes always kept open, and an additional hole carrying an automatic check-valve supported by a spring. It is so arranged that when the Bs. are first set, the automatic valve is opened against the spring resistance by the excess of air pressure above it, so that the larger of the open holes control the rate of flow of the air to the B. cylinder; as the air pressure on the under side of the valve increases, the spring closes the valve, when the smaller of the open holes control the rate of flow to the B. cylinder.

Vacuum B.—When this B. is in use a train-pipe exists as in the case of the air-pressure B., passing from the engine cab at one end of the train to the guard's van at the other. By means of an ejector or air-pump operated by the engine-driver, a vacuum of about 20 in. of mercury is obtained in the train-pipe and in the vacuum chambers which are fixed under each vehicle. The space in the B.-cylinder above the piston-rod is also kept a vacuum, as it is in direct communication with the vacuum chamber and train-pipe. The B. is applied by allowing air to enter the train-pipe whereby an alteration of the pressure in the B.-cylinder results in a motion of the piston controlling the application of the B. blocks. If through an accident a breakage of the train-pipe is caused, air at atmospheric pressure is introduced which automatically causes the application of the Bs. The maintenance of the required vacuum is essential to the working of the B. For this purpose vacuum gauges registering the difference between the pressure of the air within the vacuum chambers and that of the atmosphere are fixed inside the engine cab and the guard's van. By means of the ejector the reading is never allowed to indicate less than a certain minimum number of inches of vacuum.

Brake, tn. of Oldenburg, Germany, for centuries the port of Bremen, until Bremerhaven was founded. Shipbuilding is an important industry, and the chief manuf. is that of woollens. Pop. 7000.

Brakelonde, see JOCELIN DE BRAKE-LONDE.

Brakenbury, Sir Robert, see BRACKENBURY.

Brama, genus of acanthopterygious fish, belonging to the family Coryphænidæ. They are large, mackerel-like fishes, of bright colour, and are related to the dolphins. *B. rati*, Ray's bream, is 1 to 2 ft. long, of deep-blue colour, with a large and forked tail. It is found chiefly in the Mediterranean, and is edible.

Bramah, Joseph (1748-1814), Eng. inventor and engineer. He was the son of a Yorkshire farmer, but owing to an accident was unable to work on a farm. He was apprenticed to a cabinet-maker, and later started in business on his own account. His most famous invention was

that of the lock which bears his name, the patent for which was taken out in 1778. Seven years later he patented the hydraulic press (see BRAMAH'S PRESS). He designed a machine for the Bank of England which printed and numbered banknotes. He invented a number of other things, including machinery for the manuf. of aerated waters, and a paper-making machine. He suggested the locomotion of ships by means of screws in 1785.

Bramah's Press, a hydraulic machine used for applying considerable pressure to material such as oil-bearing seeds, or for lifting heavy bodies to a required position. It consists essentially of a massive cylinder in which a piston or plunger works, carrying at the top a platform on which the goods to be pressed are placed; the cylinder communicates with a smaller cylinder, in which a smaller piston works by force applied by hand or a small engine. At the bottom of the small cylinder is a pipe leading to a reservoir of water, the pipe being fitted with an upwardly opening valve. The pipe connecting the 2 cylinders is fitted with a valve opening towards the large cylinder. When the smaller piston is moved upwards, water is drawn from the reservoir into the smaller cylinder, and when the piston is moved downwards the water is forced through the valve in the connecting pipe, being prevented from returning to the reservoir by the valve at the bottom of the small cylinder, while the valve in the connecting pipe prevents water returning from the large cylinder during the up-stroke of the small piston. Thus water is gradually forced into the large cylinder and the plunger is carried slowly upwards. Suppose the diameter of the large cylinder to be 12 in., and that of the small cylinder $\frac{1}{2}$ in., then the proportion between the 2 surfaces will be as 1 to 2304. The small piston will have to travel through a total distance downwards of 2304 in. to force the large plunger up 1 in., but the plunger will exert a pressure upwards 2304 times that of the pressure communicated to the small piston by the engine.

Bramante, or **Bramante Lazzari** (real name Donato d'Agnolo) (c. 1444-1514), It. architect, b. at Urbino. He studied art and seems to have been successful, but was drawn far more to architecture. He travelled through Lombardy examining the art remains of the country, and executing various works at many of the tns. which he visited. Drawn later to Milan, he remained there for some years, finally leaving it for Rome. Here he was almost immediately commissioned by Cardinal Caraffa to rebuild the cloister of the Convent delle Pace and on account of his skill and speed in this work the cardinal introduced him to Pope Alexander VI. B. now began to be consulted on most of the important architectural works in Rome, executing for the pope the much-admired palace of the chancery (Cancellaria). Under Alexander's successor, Julius II., B.'s first large work was to co-ordinate the rambling building of the

palace and the Belvedere, which he achieved by two long galleries enclosing a court. Owing, however, to the impatience of the pope and B.'s zeal in trying to meet his wishes the design was not finished before the death of both the pope and B. himself. The foundations were defective, and much of the work had to be done again. B. was also commissioned by Julius to begin the great task of rebuilding St. Peter's. His designs were completed, and he worked with such celerity that before he died he had built the 4 great piers and their arches, besides the cornice and vaulting of this portion. After his death, however, his design was considerably altered by his successors, especially by Michelangelo.

Bramantino (c. 1450-c. 1530), It. painter, real name **Bartolommeo Suardi**, was probably b. at Milan, where he studied under Foppa of Brescia, Leonardo da Vinci, and especially under Bramante (hence his nickname). When the latter left Milan in 1499 B. succeeded to his position. The Brera Gallery and some of the Milan churches contain many frescoes and other paintings by him and his school; his chief oil paintings are all sacred, the 'Holy Family' and 'Crucifixion' in the Brera Gallery and 'The Dead Christ' in the church of San Sepolcro being fine examples.

Brambanan, or **Prambanan**, region in Surakarta prov., Java, with many specimens of Hindu temples which are characterised by an absence of mortar in their construction. Of these edifices the most imposing is a cruciform temple whose various extensions form a square of upwards of 500 ft. to the side.

Bramber, par. on the Adur, in the Lewes div. of Sussex, England; pop. about 300. B. Castle, built by Thomas de Mowbray, duke of Norfolk, dates from the fourteenth century. It remained until 1925 the property of the dukes of Norfolk, and in 1946 was purchased by the National Trust. The keep on the S. side is the most extensive part of the ruins which remain.

Bramble is a name frequently applied to that species of Rosaceae known as *Rubus fruticosus*. See **BLACKBERRY**.

Brambling (*Fringilla montifringilla*), bird related to sparrows, finches, and buntings. It greatly resembles the chaffinch, but is larger, and it inhabits many parts of Europe and Asia. It is known also as the bramble finch, or mountain finch.

Bramhall, John (1594-1663), Irish divine, educated at Sidney-Sussex College, Cambridge. He was rapidly advanced in the Church, and in 1633 went to Ireland with Wentworth. He was imbued with the strength of mind of his master, and his church policy in Ireland destroyed the chances of the Royalists in Protestant Ulster. He crossed over to England on the outbreak of the Civil war, and after the death of the king took refuge on the Continent. After the Restoration he became bishop of Armagh.

Bramham, vil. of the W. Riding of Yorkshire, England, not far from Tad-

caster. Near by the Percys were defeated at the battle of Bramham Moor in 1408.

Brampton, anct. tn. in Cumberland, England, 9 m. E.N.E. of Carlisle. It is noteworthy for its manu. of check and gingham cloths. The remains of an early Eng. church contain an interesting crypt. Pop. 2600.

Brampton, tn. in the co. of Derbyshire, England, near Chesterfield. Pop. 2000.

Brampton, tn. in Canada, situated in the co. Peel, Ontario. It is an important railway junction, and is 20 m. N.W. from Toronto. Pop. 4600.

Brampton, Baron. See **HAWKINS, SIR HENRY**.

Bramwell, Sir Byron (1847-1931), Scottish physician of high ability. Educated at Cheltenham College, Edinburgh Univ., and Paris, he graduated M.B. with honours, 1869; M.D. (gold medal), 1877; president of Royal College of Physicians (Edinburgh); senior ordinary physician (Edinburgh Royal Infirmary); gov. medical referee for Scotland; lecturer on principles and practice of medicine and on clinical medicine (School of the Royal Colleges, Edinburgh); lecturer on medical jurisprudence at univ. of Durham College of Medicine, Newcastle-on-Tyne, 1871. B. resigned general practice and appointments 1874, and those in Newcastle 1879. Knighted, 1924. Among his publications are: *Atlas of Clinical Medicine; Diseases of the Spinal Cord; Lectures on Aphasia; Practical Medicine and Medical Diagnosis; Diseases of the Heart and Thoracic Aorta; Anæmia and Diseases of the Blood-forming Organs and Ductless Glands; Intracranial Tumours*.

Bramwell, Sir Frederick (1818-1903), Eng. engineer. He set up for himself in 1853 as a consulting engineer. As an advocate and expert witness in the law courts and parl. committee rooms he was unsurpassed, and his services as adviser and arbitrator were in constant request. He took a leading part in many scientific societies, and was chairman of the City and Guilds Institute, and of the Inventions Exhibition, 1885. He was on the council of the Royal Society, and in 1888 president of the Brit. Association.

Bramwell, George William Wilshire, Baron (1808-92), Eng. judge, b. in London. Became barrister, 1838, and went on the home circuit. Member of the Common Law Procedure Commission, 1850, resulting in Common Law Procedure Act; Q.C., 1851; knighted in 1856; sat in court of exchequer till it ceased to exist, when he became judge of intermediate court of appeal, 1876. At his suggestion the word 'limited' was added to the titles of companies that want to limit their liability. He was partly responsible for Companies Act, 1862. Granted title Baron B., 1882. Sound law, common sense, and clear expression marked his judgments. See **Fairfield's** life, 1898.

Bramwell, John Milne (1852-1925), Scottish physician, b. at Perth, educated at Perth and Edinburgh Univ. After a year's travel he practised for some time at Goole, Yorks. Became noted after 1889 for his publications on hypnotism.

and his treatment by suggestion. Among his works are: *James Braid, Surgeon and Hypnotist; Hypnotism in the Treatment of Insanity and Allied Disorders; Hypnotic Anesthesia; Dipsomania and its Treatment—by Suggestion; Hypnotism and Treatment by Suggestion.*

Bran, the husk of wheat and other grain. In bread manuf. the bran is separated from the fine flour, while in the preparation of brown bread it is included as an ingredient. Its composition of water 14 per cent, fibrin 15 per cent, starch 44 per cent, fat 4 per cent, cellulose, etc., 17 per cent, gives it a certain nutritive value. It is also used in making cattle foods, and in cleaning goods in dyeing works.

Bran, Celtic mythological figure, often alluded to as the Blessed, son of Llyr. His sphere was that of the poetical and musical arts, and he was represented as being of gigantic height. In later times he was regarded as a saint who had brought the cross from Rome to Britain, and is an instance of how the early Church was successful in metamorphosing heathen deities into 'saints.' Hence his title of the Blessed. An anct. Welsh poem states that his head was buried under the White Tower of London, the eyes looking towards France, as a spell against foreign invasion, but Arthur disdained to take advantage of magic in guarding his kingdom, and had the head exhumed.

Brancalione d'Andalo (d. 1258), Bolognese noble. In 1253 the Romans, oppressed by their nobility, and they chose B. as their deliverer. He laid siege to the nobles in their own strongholds. His army was supplied by the Roman people, who gave him power to act as he pleased. He laid low 160 fortresses, put to death nobles and robbers alike, and even took away some of the pope's power.

Brancaster, fishing vil. and par. in the N.W. div. of Norfolk, England; pop. 1000.

Branchiæ, see GILLS.

Branchidæ, a priestly family of Asia Minor, said to have been descendants of Branchus, a son of Apollo, and in charge of Apollo's temple and oracle at Didyma, near Miletus. The Brit. Museum contains seated statues that once bordered a sacred way to the temple. See Herodotus, i. 157, vi. 19.

Branching, in botany, is divided into the dichotomous and lateral types, and by it is understood the development of similar members, e.g. of roots or stems. In dichotomy the growing apex merely divides into 2, and each half grows independently, e.g. seaweeds such as *Fucus*; in lateral B. the branch occurs as an outgrowth beneath the apex. In this second form, the parent member continues to grow and sends out these lateral branches in regular order, when the B. is called *racemose*, or *indefinite*, or ceases to grow after producing 1 or more lateral branches, and these carry out the dividing process themselves, when the B. is said to be *cymose*, or *definite*. In stems the branches arise as buds in the **axils** of leaves and consequently develop laterally. The cymose B. is the more

complicated; when 1 daughter-axis is given off at a time the B. is *uniparous*, and if the daughter-axes are developed right and left alternately, they are said to be *scorpioid*, or scorpion-like, if developed always on the same side *helicoid*, or snail-like. When 2 daughter-axes are given off simultaneously the B. is *biparous*, while more than 2 makes it *multiparous*. In roots the B. is always lateral, usually racemose, but occasionally there is a cymose system. In leaves the venation shows the B.; if there is 1 midrib it is racemose, if there are sev. prin. veins it is cymose. In the B. of an inflorescence there are cymose, racemose, and mixed types, the last including such a form as a raceme of cymes, e.g. lilac and horse-chestnut. The 4 chief types of racemose inflorescence are the *raceme* itself, the *spike*, the *umbel*, and the *capitulum*, which are described under special headings.

Branchiopoda (Gk. *βράγχια*, gills; *πόδες*, foot), an order of crustacea with sev. pairs of limbs which function as gills, hence the name. The limbs are leaf-like or lobed in form, so that the order is also known as Phyllopoda (Gk. *φύλλον*, a leaf). They are usually to be found in fresh water, and never in the sea, though occasionally they inhabit salt lakes (e.g. *Artemia*, the brine shrimp). The best-known member is *Daphnia*, the freshwater flea, belonging to the sub-group Cladocera.

Branchiostoma, name given by Costa in 1834 to a curious creature he found on the Neapolitan shore. Two years later it was rediscovered by Yarrell, described in his *History of British Fishes*, and is now known by the name he gave it of amphioxus (q.v.).

Branker, Sir William Setton (1877-1930). Eng. soldier and military aeronautical officer. Son of Col. W. G. Branker, Royal Artillery. Educated at Bedford and the Royal Military Academy, Woolwich. Began army career as a Lieutenant in the Royal Artillery in 1896 and served in the S. African war (1902). Trained in aviation 4 years before the First World War, on the outbreak of which he was appointed deputy director of military aeronautics. Carried out a flight to India during the First World War. In 1918 he was appointed controller-general of equipment and director of personnel on the Air Council; later director of civil aviation in the Air Ministry and undertook many flights on official missions. Killed in disaster to *R101*, Oct. 5, 1930.

Branco River, riv. in N. Brazil. It rises in the Parima Mts., joining the R. Negro after a course of 4000 m.

Brancovan, Constantin (1654-1714), Rumanian noble, of the family of B., or Brancoveanu, which originally came from Serbia and was connected with the family of Branko. He became prince of Wallachia in 1689, after assisting Turkey in the Austrian war of 1690, and formed alliances with Austria and Russia. In consequence of this he was accused of treason, and deposed by Turkey in 1710, and imprisoned in the fortress of Yedi

Kuleh at Constantinople, where he was tortured in an attempt to make him reveal the whereabouts of the fortune which he was said to have concealed. In 1714 he was beheaded, together with his 4 sons and his friend, Ionache Vaca-rescu. His death has been made the subject of numerous Rumanian popular ballads.

Brancovich, George, see BRANKOVICH.

Brand, another name for burnt-ear (q.v.), a fungus which attacks corn.

Brand, Henry Bouverie William (1814-1892), first Viscount Hampden and twenty-third Baron Dacre. He became private secretary to Sir George Grey in 1846, and entered Parliament in 1852 as member for Lewes. In 1872 he was elected Speaker without opposition, and re-elected in 1874 and 1880. The most remarkable event in his speakership was when, on Feb. 2, 1881, he closed the debate on the Coercion Bill, on his own authority, after a 41-hrs. sitting.

Brand, Sir Jan Hendrik (1823-88), S. African politician, b. at Cape Town, son of Sir H. C. Brand, speaker of the Cape House of Assembly, and entered the law. In 1863 he became president of the Orange Free State, and was 4 times re-elected: in 1869, 1874, 1879, and 1886. In 1876 he visited England to attend the conference to discuss the establishment of a S. African Confederation. B. opposed the scheme, which failed. At the beginning of the war between the Transvaal and Great Britain in 1880, B. preserved a neutral position, and acted as one of the mediators at the peace conference in 1881.

Brand, John (1744-1806), Eng. antiquary, b. in Durham. He received his education at the local grammar school, after which he was sent to Oxford by the aid of friends. He took holy orders there and became rector of two pars. in the city of London. In 1784 he was elected secretary of the Society of Antiquaries, a position which he held till his death. His *Observations on Popular Antiquities* is a standard work.

Brande, William Thomas (1788-1866), Eng. chemist, b. in London; educated at Westminster. He was appointed prof. of chem. to the Society of Apothecaries in 1812 and later succeeded Sir Humphry Davy in the chair of chem. of the univ. of London. A favourable reception was given his first work, *Manual of Chemistry* (1819), which was followed by a *Dictionary of Science, Literature, and Art* in 1842.

Brandels, Louis D. (1856-1941), Amer. lawyer, b. in Louisville, Kentucky, of Jewish parentage; educated in Germany and at Harvard Univ. He practised in Boston, Massachusetts, 1879-1916. For years he acted as counsel for the people in cases involving the constitutionality of the Oregon and Illinois 10-hour working day for women, the Ohio 9-hour law and Minimum Wage Act, etc., and in opposing the New Haven railway's monopoly in transportation in the New England states. President Wilson appointed him to the Supreme Court in Jan. 1916, in the teeth of opposition from strong reactionaries.

He was thus the first Jew to be appointed to the U.S. Supreme Court. His course as Supreme Court justice was marked by the fact that frequently in conjunction with Justice Oliver Wendell Holmes (q.v.) he wrote dissenting opinions championing the cause of Amer. liberalism. A convinced Zionist, he did much to shape Amer. opinion in favour of the Balfour Declaration (q.v.). He visited Palestine during the armistice, played a leading part in the London conference of Zionists at that time, and in effect nominated the Amer. Zionist representatives at the peace conference. Author of *Other People's Money and Business as a Profession*, both pub. in 1914.

Brandenburg, prov. and tn. of Germany. The Mark of B. from which the prov. originated did not occupy the same site, nor did it fall within the same boundaries, for the Mark of B. then included portions of Saxony and Pomerania. The prov. is very low and flat; at Potsdam the level above sea is a mere 15 ft. Near Silesia the country has a more undulating surface. Generally the soil is poor and consists to a large degree of sand. Only its canals and numerous rivs. prevent its classification among the barren spots of Europe. Shipping, agriculture, and cattle rearing became the chief occupations of the inhab. Numerous distilleries and factories were erected for the manuf. of cotton goods, woollen goods, linen, sugar, tiles, glass, and machinery. The Mark was united with Prussia in 1618, and in the reign of King Frederick William I. cut itself free from Poland and became Prussian under his grandson, Frederick William II., in 1791. Marshal Zhukov's armies entered B. on Jan. 29, 1945. There was a protracted struggle for the stronghold of Schneidemühl on the frontier opposite the Polish tn. of Bromberg, and also hard fighting for Landsberg, which was captured on Jan. 31. The Russian armies having advanced rapidly to the E. bank of the Oder were held up at Küstrin and, further S., in the vicinity of Cottbus, which latter place was attacked by Amer. bombers on Feb. 15 while Marshal Koniev's troops were advancing on the stronghold. The Russian offensive on the middle Oder was not resumed until Mar. 7; Küstrin, the strongpoint on the E. bank of the riv., fell to the Russians on Mar. 12. Soviet troops crossed the Oder on Apr. 12 and waged battle on the approaches to Berlin. By Apr. 21 they were fighting in the suburbs of the cap., which capitulated on May 5. See further under EASTERN FRONT OF RUSSO-GERMAN CAMPAIGNS IN SECOND WORLD WAR. B. prov. and Mark was constituted a *Land* in 1946, with Potsdam as its cap.

The tn. of B., called, during the period when it was inhabited by the Wend people, Brennibor, is situated 38 m. W.S.W. of Berlin. The tn. is in 2 parts, the old and the new, which are situated on different sides of the R. Havel. The castle and cathedral, of the fourteenth century, stand on an is. in the riv. The cathedral is noted for its remarkable crypt. Pop. (tn.) 64,000, (prov.) 2,726,000.

Brandes, Georg Morris (Cohen) (1842-1927), Dan. author and literary critic, b. on Feb. 4, of a Jewish family at Copenhagen. In 1864 he graduated at Copenhagen Univ., winning the univ. gold medal for an essay on 'The Nemesis Idea among the Ancients.' A freethinker, in early life he took a prominent part in the controversy evoked by the speculations of Kierkegaard (q.v.), and was the spokesman of a group of young radicals whose views he expounded, in 1866, in his *Dualism in Modern Philosophy*. His first important work was a vol. of essays on the Dan. poets, entitled *Aesthetic Studies* (1868), and in the ensuing 2 years he prepared an exposition of the work of Taine and *Criticisms and Portraits*—being studies of plays. In 1871 at Dresden he began his lifelong friendship with Ibsen. His position in his own country had now, however, become difficult owing to his outlook on things philosophic, literary, and religious. But he returned in 1871 to Copenhagen as lecturer at the univ., and between 1872 and 1875 delivered the first of his celebrated course of lectures on the 'Tendencies of Nineteenth-century Literature,' the first vol. of which aroused violent discussion. These lectures were trans. into Eng. under the title *Main Currents of Nineteenth-century Literature* (1901-5). They deal almost entirely with studies of Eng., Fr., and Ger. romantic literature, and the book is one of the best of its kind ever written. When (1872) the chair of literature and aesthetics at Copenhagen fell vacant through the death of Carsten Hanch, the univ. ignored the latter's recommendation of B. as his successor. B.'s friends, therefore, formed a literary society to give him a livelihood, but soon afterwards he was permitted to lecture again at the univ. In 1877 he produced *Danske Digtere*, an able work of analytical psychology, but the violence with which this book and a monograph he wrote on Søren Kierkegaard were received determined him to leave Denmark for Berlin, where he produced biographies of Esaias Tegner (1878), Disraeli (1878), and Lassalle (1881). A change in the attitude of his fellow countrymen was induced by a fresh series of lectures delivered on tour in Norway and Denmark and he returned to Denmark. An income of 4000 crowns was guaranteed by his compatriots, who stipulated that he should restrict his lectures to literary subjects. During and after the First World War, however, he exhibited such impartiality as to offend both sides. Among his other works are a monograph on Ibsen (1898); a great study of Shakespeare (1895-96), which was trans. into Eng. by William Archer; *The Romantic School in France* (1882), being the fifth vol. of his chief work *Main Currents*, and a life of Ludwig Holberg (1884). His later works, also trans into Eng., include *The Life of Goethe* (2 vols.) (1915), and *The Jesus Myth*—a reassertion of his rationalistic standpoint—and *Hellas* (1925)—an analysis of anct. and modern Greece, containing a violent attack on Brit. policy in the Balkans and on Sir Edward Grey.

See E. W. Gosse, *Two Visits to Denmark*, 1911.

Branding, the practice of marking possessions by the fixing upon them of a distinctive mark as, e.g., by the present practice of B. a mark of ownership on horses and cattle; also a form of criminal punishment. The word is derived from the Teutonic *brinnan*, to burn, and the custom is of very early date. It was accomplished by means of a hot iron. During Gk. times, slaves were branded with a Δ, while in Rom. days robbers and runaway slaves were branded with an F (*fugitivus*). Later it was abolished upon the face and the arms and legs were branded. Till 1832 Fr. galley-slaves were branded with a T.F. (*travaux forcés*). In England during 1547, under the administration of the Statute of Vagabonds, gipsies and tramps were branded with a V on the breast, while brawlers were marked with an F (for Fraymaker). The custom was not abolished till 1822. The implement used was generally a long bolt with a wooden handle, the iron being shaped at the end with the letter desired. A form of B. with cold irons became the fashion in the eighteenth century for persons of a higher class. Naturally the punishment was purely nominal. This of course led the way to its complete abandonment. In 1829 a form of B. was prevalent among mutinous Eng. soldiers. The letter D was tattooed with ink or gunpowder, while those soldiers who had earned a reputation for thorough worthlessness were marked B.C. (bad character). In 1858 the Brit. Mutiny Act ordered deserters to be marked with a D below the left armpit, an Act which was repealed in 1879. See *Old-time Punishments*, W. Andrews, 1890.

Brandis, Christian August (1790-1867), Ger. philologist and historian of philosophy, b. at Hildesheim. His works include *Aristotelis et Theophrasti Metaphysica*, 1823, and a *Handbuch der Geschichte der griechisch-röm. Philos.*, 1835-66.

Brandl, Alois Leonhard (1855-1917), Austrian philologist and author, b. at Innsbruck. In 1884 B. became prof. of Eng. at Prague; at Göttingen, 1888; at Strasburg, 1892 (succeeding Ten Brink); at Berlin, 1895. His chief works are: *Thomas of Erceledoune*, 1881; *S. T. Coleridge und die Englische Romantik*, 1886; *Geschichte der mittellenglischen Literatur*, 1892; *Shakespeare*, 1894. He ed. a new issue of Schlegel and Tieck's translation of Shakespeare, 10 vols., 1897.

Branding (*Lumbricus fetidus*), annelid with a striped body; one of the earthworms most valued by anglers.

Brandon, dist. near Durham, England, with coal mines. Pop. (with Byshottles) 18,000.

Brandon, mkt. tn. of Suffolk, England. It is situated on the Little Ouse, and has a pop. of 3100. The tn. has a grammar school founded in 1646, and has some trade in corn, coal, and timber. B. is the one place in England where the old industry of flint knapping is carried on.

Brandon, city of Manitoba, Canada. It is situated on the Assiniboine R., and

has a position in one of the most richly cultivated parts of the dominion. Pop. 18,000.

Brandon, Charles, see **SUFFOLK, DUKE OF**.

Brandon, Richard, succeeded his father, Gregory B., as public executioner, 1640. Said to have executed Charles I., Strafford, Laud, and others. D. full of remorse, 1649.

Brandt, Enevold, Count (1738-72), Dan. politician. He was under the patronage of Struensee, who gained for him the appointment of chief warder to Christian VII. during his insanity. In this post he had great influence at court. Becoming jealous of Struensee, he formed a conspiracy against him, but was finally involved in his downfall.

Brandt, Sebastian, see **BRANT**.

Brandy, spirit obtained by the distillation of grape wine. It is defined in the *British Pharmacopoeia* as a spirituous liquid distilled from wine and matured by age, and containing not less than 36½ per cent by weight or 43½ per cent by vol. of ethyl hydroxide. The Bs. of best repute are distilled and matured in France in the dists. in which the grapes are grown. These dists. are situated around the tn. of Cognac, the name itself being a synonym for B., and comprise parts of the depts. of Charente and Charente-Inferieure. The output averages about 5,000,000 gallons per annum, but is dependent on fluctuations in the wine crop. For a long period the vines of this and other dists. of France suffered greatly from the attacks of the phylloxera, but increased scientific knowledge, leading to a system of replanting and hybridising, has enabled the vine-growers to cope with the disease. After the distillate has been prepared from the wine it is stored in casks of oak-wood, which imparts a brown colour to the spirit. B. used to be described as straw-coloured liquid, but the colour is invariably deeper, a certain intensity of tint being arrived at by the addition of caramel or burnt sugar colouring to the spirit. The maturing occupies sev. years in the case of the finest Bs., but too long a period is disadvantageous, as the evaporation of the alcohol may result in too great weakening of the spirit. B. is seldom bottled 'straight'; most palates are suited by a blend of different vintages and dists. The blending is carried out in vats shortly before bottling, and it is the proper carrying out of this process which determines the quality associated with particular names. Some proprietary brands obtain a distinct flavour by means of flavouring essences. The composition of B. varies with the dist. and the character of the blend. Ethyl alcohol is usually present to the extent of from 40 to 68 per cent by volume, the remainder being water and other alcohols. In a distillate of 100 litres of cognac, C. Ordonneau found the following by-products: Propyl alcohol, 40 gm.; butyl alcohol, 218.6 gm.; amyl alcohol, 83.8 gm.; hexyl alcohol, 0.6 gm.; heptyl alcohol, 1.5 gm.; ethyl acetate, 35 gm.; ethyl propionate, butyrate, and caprate, 3 gm.; cinnanthic ether, 4 gm.; aldehyde, 3 gm.; and traces of acetal and

amines. B. is the form in which alcohol is usually administered as a medicine, as its stimulating properties are quickly exercised.

Brandywine Creek, stream rising in Chester co., Pennsylvania, U.S.A. It flows into the Delaware R., and finally empties itself into Christiana Creek at Wilmington. A battle was fought on its banks during the Amer. war of Independence in 1777.

Branford, township and bor. in New Haven co., Connecticut, U.S.A., at the mouth of the B. R., 7 m. E.S.E. of New Haven. It has the James Blackstone Memorial Library, 1896; manufs. iron fittings, locks, and hardware. Pop. 7000.

Brangwyn, Sir Frank, Eng. painter, b. at Bruges, 1867. On coming to England B. attracted the notice of William Morris by his work, and went for a time to the latter's studio. His frequent travels in the E. greatly influenced his artistic development. Rich colouring and well-balanced design mark his productions. His decorative panel, 'Modern Commerce,' is in the Royal Exchange, his 'Trade on the Beach' in the Luxembourg, and a notable series of frescoes in tempera on biblical subjects in the chapel of Christ's Hospital School, Italy. Germany, America, and Australia also possess specimens of his work. B. also made designs for book-decoration, pottery, tapestry, and furniture. He became A.R.A. in 1904. Consult the *Studio*, 1898; and Shaw Sparrow's *Frank Brangwyn*, 1910. In 1925, the nation received an offer from Lord Iveagh of £20,000 for the decoration of the royal gallery in the House of Lords by a series of paintings by B. B. began painting a number of great panels, 5 of which were placed in the gallery; but in 1930 the House of Lords decided by 55 votes to 11 to reject the panels, apparently on the ground that the paintings, though highly meritorious, were not in keeping with the formal sobriety and restrained dignity of the gallery. Awarded the gold medal of the Berlin Academy in 1912. President of the Royal Society of Brit. Artists from 1913 to 1918. Elected R.A. in 1919. Member of the Legion of Honour. Member of most representative European societies of artists, enjoying, perhaps, the highest reputation on the Continent of any contemporary Brit. painter. Awarded the Albert Medal of the Royal Society of Arts, 1932. Knighted, 1941. Publications: *Belgium*, 1916; *The Way of the Cross*, 1935.

Brankovich, George, prince of Serbia from 1427, with intervals, to 1457. He was driven into Hungary as a refugee by Sultan Murad II. After a period of exile, he organised an expedition against the Turks, under himself, the Hungarian hero Hunyadi Janos, and Wladislas of Poland. Murad asked for a 10 years' truce, offering excellent terms, which were accepted. But on receiving news that a Venetian fleet was about to attack Murad, the allies broke their agreement and marched S. B., fearing Moslem vengeance, sent secret intelligence to Murad, and also dissuaded Albania from joining the league.

Murad consequently won the battle of Varna (Nov. 1444), Wladislas being killed and Hunyadi narrowly escaping. B. was allowed to keep his principality.

Branks, a scolding-bridle. It was an instrument consisting of an iron hoop with hinges at the sides and fashioned to enclose the head. An arrangement in front rendered speech impossible; in some cases a knife was used, so that the slightest movement caused great pain. Any woman guilty of a petty breach of the peace was formerly marched through the streets by the beadle with the B. upon her head, making herself a subject for the insults and jeers of the populace.

Branksea, see BROWNSEA.

Branksome, eccles. par. in the E. div. of Dorsetshire, England.

Brankursino, see ACANTHUS.

Brant, Joseph (1742-1807), chief of the Mohawk Indians. He assisted the Brit. during the Indian and revolutionary wars. His energies were quite as indefatigably exerted on behalf of peace in later years. He became a zealous Christian in his later life, and trans. the Bible into Mohawk. He visited England for the purpose of raising money on behalf of the erection of the first Episcopal church in Canada in 1786. A monument is erected to his memory at Brantford.

Brant, or Brandt, Sebastian (1458-1521), Ger. poet and prose writer, b. at Strasburg. He studied at the univ. of Basle, where he distinguished himself, and afterwards became a prof. there. He returned to Strasburg to practise law in that tn., and was honoured by the Emperor Maximilian being made count palatine. Among his writings are Lat. poems and treatises on law. But his best-known book is *Das Narrenschiff* (The Ship of Fools), pub. in 1494, one of the most famous books of the time. Although devoid of artistic beauty of structure, and though the satire is often coarse, the work took the popular taste. The idea of the book is supposed to have been suggested to B. by a ship being borne in a procession, which he used as a vehicle to satirise all sorts of people. The greatness of the book consists chiefly in the influence which it had on later times, and it is supposed to have given Erasmus the idea for his *Praise of Folly*. The book has been trans. into most of the European languages in verse. Alexander Barclay's *Shippe of Fooles* (1509) is a free translation in verse; and an abridged prose translation was pub. by Henry Watson in 1517.

Brantford, cap. of Brant co., Ontario, Canada; 24 m. W. of Hamilton and 30 m. N. of Port Dover harbour on Lake Erie. It is the site of His Majesty's Chapel of the Mohawks, the first church built in Ontario. The city has a collegiate institute and vocational school and many primary or public schools; a well-equipped general hospital, 51 churches, a fine public library, 4 parks. Here is the Provincial School for the Blind. The chief industries are: agric. machinery and implements, textiles, binder twine, mining and wood-pulp machinery. B. is the centre

of a very rich agric. dist. It is on both the Canadian National and Canadian Pacific railways and has a modern airport. Its residential dists. along the Grand R. are the largest in S. Ontario. B. has developed from land given by the Six Nations Indians in 1830, from the 'reserve' given to their leader, Joseph Brant, in 1784, by the Brit. Gov. to recompense them for their homes abandoned in the Mohawk Valley, New York State, during the Amer. Revolution. Sometimes called 'the telephone city,' from the fact that it was here that Dr. A. G. Bell invented the telephone in 1874. Pop. 32,000.

Branting, Karl Hjalmar (1860-1925), Swedish statesman, b. in Stockholm, Nov. 23, 1860; son of Lars Gabriel B., a teacher of gymnastics; and of his wife, a noted singer. Educated at Beslow School, Stockholm, till 1877, then at Upsala—distinguished as Latinist and mathematician. In 1882 entered Stockholm observatory; soon deserted astronomy for politics. Ed., first, *Tiden*; then, from 1886 till 1917, *Socialdemokraten*—which he developed from an obscure weekly into a celebrated daily. Foremost in formation of Labour party, 1889—leader from 1907. First Socialist to enter Second Chamber, 1896. Finance minister a little while in Liberal-Labour coalition, 1917; first became Premier, 1920; again from 1921 till 1923; and from 1924 till Jan. 25, 1925. Strong supporter of League of Nations, being elected to its council in 1922, and being Swedish delegate to Paris conference for settlement of Åland and Spitzbergen questions. One of two to receive Nobel peace prize, 1921. D. at Stockholm, Feb. 24, 1925.

Brantôme, tn. in dept. of Dordogne, S.W. of France, famous for abbey remains (A.D. 770); pop. 2900.

Brantôme, Pierre de Bourdeille, Seigneur de (c. 1540-1614), Fr. historian, b. in Périgord, educated at Paris and Poitiers. He took orders, and was given sev. benefices. He, however, had no inclination to enter the Church, and chose arms as his profession. He gained for himself a great reputation as a soldier during the period of religious wars in France. He travelled extensively, visiting Scotland, England, Spain, Portugal, and Morocco. During the reign of Charles IX. he fought on the side of the Catholics. An accident compelled his early retirement from the field, but not before he had to a certain extent been won over to the reforming party. He spent the remainder of his life in writing those memoirs for which his contact with so many of the leaders of the period had so fitted him. As an historian he is not altogether trustworthy, but his *Mémoires of Hommes Illustres* and *Dames Galantes* have a fascinating style of their own, and he draws a realistic, if not very charming, picture of the profligacy and vice of the court life of the period. His *Mémoires* were pub. in 9 vols., 1665-66.

Braque, Georges (b. 1881), Fr. painter. His father was a contractor for house-painting, and B. in his boyhood observed his father's workmen mixing colours and

especially noted the processes of 'grain-ing' and 'marbling.' He was the leader of the Cubists, a name which evidently dates from 1908, one of his canvases in the Salon des Indépendants directly suggesting the description. Picasso (*q.v.*) is commonly credited with having invented Cubism, but B. probably preceded him with crystallisation, the crystal theory undoubtedly suggesting Cubism. B.'s landscapes showed meadows crumpled up into crisp, candy-like masses, and seascapes in which the waves had razor edges. B. aimed at producing 'a new sort of unity, a lyricism which issues wholly from the means employed,' and his respect for his material and, in his own words, for the 'Rule which corrects the Emotion' is obvious. One of the best examples of his art is 'Still Life' (1912), which illustrates the idea of shuffling arbitrarily selected fragments of an object seen from different points of view. His 'Les Grandes Baigneuses' (1931) shows an ingenious combination of forms expressing movement. Later pictures include 'Ulysse' and 'Thémis et Héra.' Exhibited in London, 1933 and 1946. See Frank Rutter, *Evolution in Modern Art*, 1925.

Bras d'Or, Lake, a gulf belonging to the Atlantic Ocean, which very nearly divides Cape Breton Is. into 2 parts. It is irregular in shape, and the isthmus in the S., which joins the 2 pieces, is just a little more than 1 m. in breadth.

Brasenose College, Oxford, was founded by William Smith, bishop of Lincoln, and Sir Richard Sutton of Prestbury, Cheshire, in 1509. The main front, facing Radcliffe Square and the first quadrangle, except the upper storey, date from the foundation. In the hall and chapel, 1663-66, the Gothic and Grecian styles are, curiously enough, combined. As early as the twelfth century a B. Hall existed, and in 1334 some students migrated to a house in Stamford, known as B. Hall, finding the factions in Oxford a hindrance to learning. An anct. knocker, in the shape of a nose, which was brought in 1890 from this house to the hall in Oxford, may well be the origin of the name. Supernumerary fellowships have been added to the original foundation for a principal and 12 fellows. In 1691 William Hulme made provision for 12 scholars, and for an endowment of 8 senior scholarships open to members already in residence. Robert Burton, author of *The Anatomy of Melancholy*, and Walter Pater both graduated at this college.

Brasidas (*d.* 422 B.C.), one of the leading warriors of Sparta during the early days of the Peloponnesian war. He was *b.* somewhere about the year 450 B.C. and became prominent about the year 430 as a leader against the Athenians. He rapidly came to the front and occupied a number of responsible offices in the state. His main ambition was to crush the power of Athens, and with this object in view he joined Perdiccas, the king of Macedonia, after having conducted a campaign in Thrace. But that he was true to his main ambition is obvious from the fact that he refused to help Perdiccas

after the objects of his alliance had been fulfilled. A number of important tns. were won over to his side, and when in 423 a truce was made with Athens by Sparta, B. refused to give up some of the tns. he had taken, or which were claimed by the Gks. In the same year he fought again in alliance with Perdiccas, but quarrelled with him owing to the desertion of the Spartans by the Macedonians during one of the battles. The truce with Athens came to an end in 422, and before Amphipolis B. routed the Athenians under Cleon, but was himself killed in the battle. He was buried in Amphipolis, and became one of the heroes whose memory Sparta delighted to honour. As a warrior he was courageous, and as a general quick in forming his plan of campaign, and equally quick in carrying it out. Details of his career are given by Thucydides, and reference to him is also made by Xenophon.

Brasov, see BRASSO.

Brass, tn. on the mouth of the B. estuary, in the Niger delta, S. Nigeria, said to be named from the brass rods exchanged by early traders for oil and slaves.

Brass, metal composed of copper and zinc. It has been known from very early times; it is mentioned in anct. Scripture hist. as being manufactured into instruments of music, ornaments, and various other things. In all probability these were not made from B., but from bronze, since we have no clue to the composition of the metal. The Romans used an alloy which they called *aurichalcum*, and this seems to have been B. Monumental Bs. are the earliest traces of the use of the metal in Great Britain. In the reign of Henry VIII., the export of B. was forbidden, a fact which indicates that the manuf. of B. was extensively carried on in England. The former method of manuf. was that of mixing with powdered zinc ore small quantities of copper. The mixture then was heated in large pots over a furnace. The modern process is that of mixing metallic zinc with copper, in crucibles, or in a reverberatory furnace, the copper being first reduced to a molten state, and then the zinc added, also in a melting state. When crucibles are used, there is less waste. The molten metal is then poured from the crucibles into moulds to form ingots for remelting. The B. trade in England is carried on chiefly at Birmingham. The various processes are casting, rolling, and drawing, stamping, tube-drawing, and casing, and B. finishing. B. wire is used in immense quantities for the manuf. of pins, paper-maker's wire web, shoe rivets, etc. B. finishing includes dipping, burnishing, lacquering, etc. When an article in B. is made, it goes through a cleansing process in acid, and then it is dipped into a solution of nitric acid. For the process of burnishing, polished steel tools are used, and then the article is washed in a weak solution of acid, after which it is dried in sawdust. When lacquering is done the work is heated, and while in this state a coating of varnish, made of shellac

dissolved in spirit, is spread over the surface of the article.

Brasses, Monumental or Sepulchral, brass plates which are inlaid in polished stone. They are used to commemorate the deceased. They are to be found in old churches, being sometimes let into the walls, or more frequently the floor. The figure of the dead person is usually engraved upon the metal, or, in some cases, the figure of the cross or other sacred emblem is inscribed. The coat of arms belonging to the dead, together with an inscription, are also cut in the brass. If the brass is in the form of an effigy, the coat of arms and the inscription are engraved on separate plates let into the same slab. A metal called latton is used sometimes as a substitute for brass. The custom of laying down M. B. is of great antiquity, though the period of its inception is unknown. They are considered by some authorities to be of Fr. origin, but no evidence has been found to substantiate this view. At Stoke D'Abernon in Surrey is to be found the earliest Eng. example of M. B., that commemorating Sir John d'Abernon, who d. in 1277. That of Simon de Beauchamp, who d. very early in the same century, which is the earliest recorded, is not extant. Many B. were destroyed by the chances of war, or by the iconoclastic hands of the Puritans. Such as have escaped, apart from their antiquarian value, are useful in giving an accurate representation of the costumes of their period. See C. Boutrell, *Monumental Brasses and Slabs of the Middle Ages*, 1849; E. R. Suffling, *English Church Brasses from the Thirteenth to the Seventeenth Century*, 1910; W. F. Gawthorpe, *The Brasses of our Homeland Churches*, 1923.

Brassey, Thomas (1805-70), Eng. railway contractor. B. near Chester, he was educated at the local school. He began life as a surveyor, and thus acquired the outlook and experience necessary to the calling he subsequently adopted. He was in business in Birkenhead. There he undertook a contract for railway work, and in a few years was at the head of a great undertaking which carried out contracts in all parts of the world. Among his chief contracts were the Great N. railway, 1847-51, and railways in France, Italy, Canada, Australia, and India.

Brassey, Thomas, first Earl (1836-1919), eldest son of Thomas B. (q.v.). He devoted himself particularly to naval questions, and is known as the founder of *The Naval Annual*. He filled the position of civil lord of the Admiralty from 1880 to 1884, and in 1884-85 was secretary. He was governor of Victoria, 1895-1900. Knighted, 1880; baron, 1886; earl, 1911. He pub. *British Seamen* (1877) and *The British Navy* (5 vols., 1882-83).

Brassica, generic name of a number of Cruciferous plants which are found in Europe and Asia, and include sev. well-known Brit. species. Many of them are cultivated, their various parts serving as food. *B. oleracea* is the cabbage, which has derived from it: *B. acephala*, Scotch kale; *B. botrytis*, broccoli; *B. caulorapa*,

kohl-rabi; *B. cauliflora*, cauliflower; *B. bullata*, savoy cabbage; *B. gemmifera*, Brussels sprouts. *B. (or Sinapis) nigra* is the black, *B. (or S.) alba*, the white mustard. *B. campestris* is the common turnip, and its variety *B. napus* is the wild rape, *B. rapa* being the wild turnip. *B. campestris oleifera* is the colza, and *B. sinapis sinapisstrum (or S. arvensis)*, the charlock, common in Brit. cornfields.

Brasso (Brasov) (formerly Kronstadt), a tn. of Rumania, formerly in Hungary, standing at the foot of Transylvanian Alps, 260 m. S.E. of Budapest by rail. Situated at a height of 1859 ft., it is an important commercial centre, having a trade with all the Balkan states. There is a Gothic cathedral dating from 1385. The manufs. include cloth, leather, cement, and candles, and there are also petroleum refineries and distilleries. It occupies an important strategic position, and was the scene of fighting in the First World War. Pop. 45,000.

Brassy, see *Br.*

Brathwaite, Richard (c. 1588-1673), Eng. poet. He entered Oxford Univ. at the age of 16, passing thence to Cambridge. He settled later in London, and took to play-writing. He produced *The Golden Fleece* in 1611, a collection of poems. This was followed in 1614 by *The Poet's Willow* (pastorals), *The Prodigal's Teares* (moral treatise), and *The Schollers Medley* (historical survey). In the following year he wrote a collection of satirical compositions called *A Strappado for the Devil*, which followed the style of the *Abuses Stript and Whipt* of George Wither. He d. at Richmond in Yorkshire. *Barnabee's Journal* (1638) is the only noteworthy work among his many publications.

Bratianu, Ion (1864-1927), Rumanian politician, son of Ion Constantin B. (q.v.). Leader of the Rumanian Liberals, he was a zealous supporter of the Entente cause in the First World War, and throughout the period prior to his country's entry into the conflict preserved an attitude of benevolent neutrality towards the Allies. He concluded with the Entente powers a treaty on the basis of which Rumania declared war on Germany and Austria. During the war and almost to the year of his death, B. was Premier and, virtually, dictator of Rumania. Was one of the Rumanian delegates to the Inter-allied peace conference in Paris in 1919. He was in opposition 1919-21.

Bratianu, Ion Constantin (1821-91), Rumanian statesman, b. at Pitesci, Wallachia. At the age of 17 he entered the army. A few years later he went to study in Paris, where he associated with advanced Liberals and brought back their ideals with him to Wallachia. In 1848 he took part in the Rumanian rebellion, and was prefect of police at Bucharest under the provisional republican gov. When the rising was crushed he, with other exiles, escaped to Paris, but still continuing his republican propaganda he was in 1854 fined and imprisoned for sedition. In 1856 he returned home and took his place thenceforward as one of the Liberal

leaders. He had much to do with the election of Prince Charles of Hohenzollern-Sigmaringen to the throne of Rumania in 1866, and was one of the ministry up to 1870. In 1876 he became Premier, and was thus head of affairs during the war of 1877, in which Rumania, with the help of Russia, achieved her independence. His premiership lasted until 1888, and was marked by reforms, especially in education and commercial affairs. After the return of the Conservative party to power he narrowly escaped impeachment in 1890. Besides being a statesman, B. also attained distinction as a political writer.

Bratislava (Hungarian Pozsony, Ger. Pressburg), city and Danubian port of Czechoslovakia. It is the cap. city of Slovakia, and of the prov. of B., situated amidst beautiful scenery on the l.b. of the Danube, 50 m. E. of Vienna. It was formerly the cap. of Hungary (1541-1784), having belonged to that country from 896 to 1918, and in the Gothic cathedral (thirteenth century) many kings have been crowned. Other noteworthy buildings are the ruins of the royal castle (built in 1645, destroyed by fire in 1811), the Franciscan church (1272), the tn. hall (1288) with museum, and the Landhaus, where sittings of the Hungarian legislature were held. There is an archiepiscopal palace, and the Grassalkovic palace was formerly the residence of the archduke. A Hungarian univ. was founded here in 1465 by Corvinus. This has been removed to Pécs, and there is now a Slovak univ. Trade is chiefly in furniture, tobacco, biscuits, and liqueurs. There is a broadcasting station here, and also oil refineries which were subjected to air attack during the Second World War, notably by the Soviet Air Force in June 1944. The city was captured by Russian troops on Apr. 7, 1945. Pop. 172,600.

Bratsberg, mountainous dist. in the S. part of Norway. It is now called Telemark (q.v.).

Bratslav, tn. in the valley of the Bug, Ukraine; once cap. of a Polish prov., became Russian in 1775. Largely inhabited by Jews. Pop. 7000.

Brattice, framework of boards, iron plates, or brickwork, built transversely in the galleries of mines, to regulate the flow of ventilation. In cases of emergency, sheets of heavy canvas, called B. cloths, impregnated with a creosote preparation, are sometimes used.

Brattleboro', vil. of Windham co., Vermont, U.S.A. Its industries comprise the manuf. of organs, carriages, furniture, and machinery, while a large portion of the inhab. are engaged in sugar refining. Pop. 9600.

Brauchitsch, Heinrich Alfred Hermann Walther von (1881-1948), Ger. soldier, b. in Berlin, of aristocratic family. He served in the artillery and rose to rank of captain during the First World War. After the war he was employed by Gen. von Seeckt in the work of building up the Ger. Army while ostensibly conforming to the treaty of Versailles. He became a major-general in 1931, and a chief of artillery in 1932.

He gave his allegiance to Hitler and was given the E. Prussian command, where he was responsible for new fortifications. Under the Nazis his rise was rapid, and in 1938 he was made commander-in-chief of the Ger. Army, and a field marshal. He carried out the occupation of Austria and Czechoslovakia, and was instrumental in building the Slegfried wall. On the outbreak of the Second World War, B.'s long-formulated plans for the conquest of Poland were carried out by *blitzkrieg* methods, and he was responsible for the general conduct of the war until relieved of his command by Hitler in Dec. 1941. He d. at Hamburg while awaiting his trial for war offences.

Braun, Karl Ferdinand (1850-1918), Austrian physicist, b. at Fulda; educated at Fulda Gymnasium, and Marburg and Berlin univs. In 1872 he graduated with a work on the vibration of chords. He was successively prof. at Marburg, Strassburg, Karlsruhe, and Tübingen, directing the building of the Physical Institute there. In 1895 he became prof. of physics at Strassburg Univ., and director of the Physical Institute. His best-known researches are the so-called 'B.'s cathode-ray tube' and the wave circuit. The wave circuit is the basis of all arrangements for wireless telegraphy, which he improved by inventing a method allowing the sender's energy to be increased at will, and by another by which dispatches can be sent in a particular direction. His calculation of the constant of gravitation, by the torsion balance method, agrees closely with that of Prof. Boys. He and Hartmann constructed an apparatus for measuring the intensity of the magnetic field by a fine bismuth wire. B. showed the identity of electric waves and light. His latest works were on demonstrating metallic gratings so fine as not to be within the microscope's range. In 1901 his *Drahtlose Telegraphie durch Wasser und Luft* appeared at Leipzig. In 1909 he and Marconi jointly won the Nobel prize for physics.

Braun, Otto, Prussian statesman; b. Jan. 28, 1872, in Königsberg; son of a railwayman. At first a printer and lithographer, became editor and master printer. Leader of the E. Prussian land-workers' movement. In 1913, Social Democratic member of the Prussian Parliament; in Nov. 1918, Prussian minister of agriculture. In 1919, member of the Weimar National Assembly; in 1920 of the Reichstag. In Mar. 1920 he became Prussian Prime Minister, in addition to minister of agriculture. In 1921 he had to give place to the centre-leader Stegerwald. He came back in Nov., head of the ministry of the great coalition. Later, he was put forward as Social Democratic candidate for presidency of the republic after Ebert's death, and received upon the first ballot nearly 8,000,000 votes. In the second ballot, however, the Social Democrats and the Centre polled for Marx as joint candidate of the Republican parties. B. was recompensed by being once more chosen by the Landtag Prime

Minister of Prussia, and continued in this office until 1933. On Hitler's rise to power he went into exile in Switzerland.

Braunau (Broumov), tn. and cap. of gov. dist. in Czechoslovakia with manufs. of cloth, woollen, and cotton goods. It possesses a famous Benedictine abbey (1321), and a church (1683). It was the bp. of Adolf Hitler. During the Second World War it was occupied by the U.S. Third Army on May 5, 1945. Pop. 7000.

Brauner, Bohuslav (b. 1855), Czech chemist, b. at Prague. He studied chem. under Bunsen and, in England, under Roscoe. He was a leading authority on inorganic chem. and conducted valuable research work on atomic weights and in the analysis of elements. Among his publications are: *Fluorescence*, 1877; *Atomic Weight of Beryllium*, 1878; *Chemistry of the Rare Earths*, 1882; *Experimental Studies in the Periodic Law*, 1889; *Observations on Argon*, 1895.

Braunite, a tetragonal mineral, occurring as small brown or black octahedra and compact masses in manganese deposits ($3\text{Mn}_2\text{O}_3 \cdot \text{MnSiO}_3$). It is found in large quantities and mined as an ore of manganese in the Central Provinces of India.

Braunsberg, tn. of E. Prussia in ter. occupied by the Soviet Union (1945), having been captured by the Russians in the closing stages of the Second World War on Mar. 24, 1945. It is situated on the R. Passarge, 2 m. from the mouth of the riv. Its manufs. included leather, felt, and machinery, while it had an extensive pre-war trade in yarn, timber, and grain. Pop. 14,000.

Brauer, or Brouwer, Adrian (1608-1640), Dutch painter, b., according to some biographers, at Haarlem, and according to others at Oudenarde. It is believed that he led a dissolute life, but his humble parents succeeded in apprenticing him to the painter Frank Hals. Hals, however, turned B.'s gifts to his own advantage, while the pupil was half starved. Rubens, under whose influence he came, gave him a decent burial. Among his pictures are: 'A Quarrel between Two Peasants,' at Dresden; and 'Spanish Soldiers playing at Dice,' at Munich—most of them, indeed, being a reflection of the life he led. See H. Talbot, *Laughter from the Lowlands*, 1936.

Brava, small is. in Cape Verde archipelago, Africa. Healthy, mountainous, and fertile inland. Harbour, Furnas. Pop. 7000.

Brava, or Barava, tn. in It. Somaliland, situated on the coast. It is the chief port from Cape Guardafui to Mombasa. It has a considerable trade with India and also Arabia. Pop. 5000.

Bravoos, lt. bandits, outlaws, and assassins, who offered their services for money. They were originally retainers of noble It. families, and often fought for their cause, but they degenerated into ruffians who would do anything for money.

Bravura, It. term applied in music to a composition, and sometimes to the class of performance. Music of the B. type is characterised by a vigorous motif with

many difficult and florid passages. A B. air demands skill and spirit in its execution, each syllable being divided into sev. 'notes.' It connotes 'skill': e.g. *Aria di Bravura*, a brilliant aria making great demands on the singer. Mozart excelled in this style, largely through his mastery of instrumentation.

Brawling, quarrelling or creating a disturbance in a church. The B. scenes common during the early days of the Reformation caused an Act (1551) to be passed punishing the offender. This Act was superseded in 1860 by the Ecclesiastical Courts Jurisdiction Act, under which persons so convicted, either in Ireland or England, whether clergy or laity, are liable to a fine not exceeding £5, or imprisonment for not more than 2 months.

Brawn, food made with pig's head. The head is thoroughly cleansed and boiled. After that, all the bones are removed, and the whole is chopped into small pieces. It is set by means of the liquor in which it has been boiled and can be placed in moulds.

Braxfield, Robert Macqueen, Lord (1722-1799), a Scottish judge, was admitted advocate in 1744, and acted as counsel for the Crown in many difficult feudal cases after 'the '45.' Made a lord of session in 1776 with the title of Lord B., he became lord justice-clerk in 1788, and in the sedition trials of 1793-94 earned the name of 'the Jeffreys of Scotland.' He is delineated in Stevenson's *Weir of Hermiston*.

Bray: 1. A par. in Berkshire, near Maidenhead. It has a pop. of 3500, and is situated on the l. b. of the Thames. Its name is famous by reason of the ballad of *The Vicar of Bray*, but the identity of the vicar is uncertain (see BRAY, VICAR OF). **2.** A coastal tn. of Wicklow co., Ireland. Its beautiful surroundings have increased its importance; it is known as the 'Irish Brighton'; pop. 7700. **3.** A small dist. of France, in the old prov. of Normandy, now included mainly in the E. div. of Seine-Inférieure, but also in the dept. of Oise. It is on a cretaceous plateau.

Bray, Anna Eliza (née Kempe), (1790-1883), Eng. author. She was b. in London, and studied with a view to a stage career. Among her many works, comprising romance and travel, are: *The Borders of the Tamar and Tavy*, *Life of Thomas Stothard, R.A.*, and *A Peep at the Pixies*.

Bray, Sir Reginald (d. 1503), architect, was the son of a priory councillor of Henry VI. Henry VII. was his loyal friend, and made him a life grant of the Isle of Wight and Carlishrook Castle. B. took part in the battle of Blackheath, 1497, and was afterwards made a knight banneret. He built St. George's Chapel, Windsor, to which he also made generous contributions, and in which his tomb may still be seen. It seems certain that he designed the beautiful Henry VII.'s chapel at Westminster, although he d. before its completion.

Bray, Thomas (1656-1730), an Eng. divine and philanthropist. He was b. in

Shropshire. After being educated at Oswestry school, he went to All Souls' College, Oxford. His graduation took place there in 1678. He obtained the rectory of Sheldon in 1690, where he wrote a portion of his *Catechetical Lectures*. These lectures earned for him a wide reputation. His energies were now directed towards the institution of public libraries in England and America. Phenomenal success attended his efforts, no fewer than 80 in England and 36 in America being constructed before his death. The Society for the Promotion of Christian Knowledge developed from this scheme. He went to Maryland in 1699 as the bishop of London's commissary, but returned in 1706 to a living at Aldgate. **Bray, Vicar of**, the notorious V. of B. in Berkshire. He was Simon Aleyn, and was appointed vicar during the reign of Henry VIII. He maintained his position during the reigns of Edward VI., Mary, and Elizabeth by the expedient method of accommodating his religious principles to those in power. It was his aim to live and die V. of B., an ambition which he achieved. The fickle vicar is made to live through the reigns of Charles II., James II., William III., Anne, and George I. in the ballad *In Good King Charles's Golden Days*.

Brayley, Edward Wedlake (1773-1854), Eng. antiquary and topographer, b. in Surrey. An enameller by trade, he was librarian and secretary of the Russell Institution, 1825-54, and compiled a catalogue of it. B. was part compiler with John Britton (q.v.) of *The Beauties of Wiltshire*, 1801. Its success led to the *Beauties of England and Wales*, 1801-15. He also wrote *Londiniana*, 1829, and, with Britton, *Memories of the Tower of London*, 1830. See Britton's *Autobiography*, 1850.

Brazil, a city of Clay co., Indiana, U.S.A. It is about 15 m. N.E. from Terre Haute. Pop. 8100.

Brazil, United States of, republic of S. America. It is the fifth largest country in the world, comprising one-fifteenth of the terrestrial surface of the globe, 2600 m. long, by 2500 m. broad. It extends between lat. 4° 30' N., and 33° S., and between long. 35° and 70° W. Almost the whole of B. is in the S. hemisphere. Area, 3,275,500 sq. m.

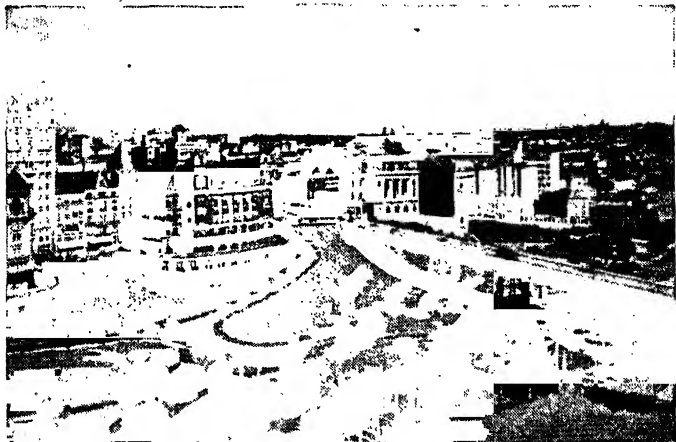
Geography and Resources.—B. possesses one of the most magnificent riv. systems in the world. The Amazon, navigable throughout its course, traverses practically the entire country, and by means of its many affluents waters the whole state. Of the rivs. the more important are the Paraná, Madeira, Paranahyba, São Francisco, and Iguaçu, the falls of which are the third largest in the world. The Rio Grande and the Uruguay also drain large tracts of country. It is now possible to travel 6446 m. on the riv. systems of B. in Brazilian steamboats. B. is a country of many mt. ranges. Half of its surface consists of an elevated plateau, the mean altitude of which is from 2000 to 3000 ft., with here and there an isolated range of mts. from 5000 to 7000 ft. high (Itaitaia, 9800 ft.). Towards the E. coast are the

highest summits, ranging from São Francisco on the N. to the S. part of the state of Rio Grande. The other prin. ranges are those of the Brazilian Andes, where nearly all the affluents of the Amazon have their source, and those ranges which separate the valleys of the Amazon and Orinoco. The coastal range is divided into the Serra do Mar, Serra do Orgãos, Serra da Estrella, Mantiqueira, Tingua, Espinhaco, Pyrenees, and Paraná plateau. The resources of the republic are practically inexhaustible. Rubber, rare timbers, medicinal plants, nuts, oils, wax, coffee, sugar, cotton, cocoa, tobacco, and practically all the precious and semi-precious metals are found or grow in comparative abundance, and it may safely be said that no country in the world is so rich in natural resources as B. There are over 50 rubber companies in operation with a capital of £2,000,000, and the 'fine hard Pará' rubber is the best rubber in the world. Fibre-producing plants are, too, one of the greatest sources of wealth in the republic, and one of the least exploited. These are chiefly employed in making sackings for the export of coffee. Canhamo, or Brazilian hemp, is a valuable plant, cultivated in the state of Rio on 1,000,000 sq. metres of land. Sisal and pita are also extensively grown. Unfortunately it does not pay to export any but the finest timbers, by reason of heavy carriage rates. The hardness of most of the varieties renders them less acceptable to furniture-makers than they were half a century ago, and mahogany may be said to have receded in commercial value. On the other hand, peroba, vinhatico, ipé, canella, pinna, and other woods are marketable, and fetch high prices locally. The exportation of nuts is large, and that of medicinal plants, quinas (furnishing cinchona), angelica, quassia, gentian, and ipecacuanha is even more considerable. Agriculture is principally concerned with coffee, sugar, cotton, cocoa, and tobacco. The average ann. crop of coffee is about 14 million tons. Probably nearly four-fifths of the world's coffee production is from São Paulo alone. About 1,000,000 tons of sugar are produced annually. Cereals are secondary to these, but by no means unimportant. Cocoa and tobacco are also produced and exported. In the years before the Second World War cattle were estimated at 41,000,000; swine, 25,000,000; sheep, 13,000,000; horses, 6,000,000; and goats, 6,000,000. A great number of head of stock is exported, and much is utilised for canning or meat essence.

Minerals.—The metals, precious and semi-precious, are found in comparative abundance, the prin. gold mines being situated in Morro Velho and Passagem in the state of Minas Geraes. The average yield is 12 gm. per ton. The ann. yield is about 120,000 oz. of the value of £520,000-£600,000. The total ann. value of diamonds exported averages £120,000. The prin. diamond fields are near Diamantina in Minas Geraes, Bagagem, Canavieiras, Grão Mogol, Goyaz, and central Bahia. Other minerals of importance

found in B. are coal, agate, amethysts, asbestos, beryls, copper, graphite, jasper, iron, lead, manganese, talc, petroleum, and monazite. The production of minerals was greatly increased as a result of B.'s participation in the Second World War, and is likely to become a growing and permanent part of the country's industrial economy. Iron ore is mined principally in the state of Minas Geraes; manganese in Minas Geraes, Matto Grosso, and Bahia; chrome ore in Bahia; tungsten and nickel in Goyaz; bauxite in Minas Geraes, Espírito Santo, and Maranhão.

Tapuyan tribes are found E. of the Cordilleras from the peninsula of Goajira on the N. to the borders of Chile, whilst the Caribs extend from the Upper Xingó in the heart of B. to Cuba and Haiti in historical times. All these peoples, except where they have come into contact with civilisation, live the life of hunters, trappers, and fishers, and the majority of them dwell far from civilised communities. There is, however, still a *terra incognita* for the European explorer in the heart of B. The unknown region of B. is the country to the N.E. of Cuyabá



SÃO PAULO, BRAZIL: VIADUTO DO CHÁ

Canadian Pacific

Exports and Imports.—Coffee at one time held a dominating place in B.'s export trade, and together with raw cotton occupied some three-quarters of the total exports. This proportion was reduced to below 40 per cent as a result of industrial development and increased mineral production. In addition to minerals, coffee, and cotton, commodities exported include mainly rubber, tobacco, hides, frozen meat, and cocoa. Imports consist chiefly of machinery, industrial and transport equipment, coal and coke, and chemicals.

Ethnography.—The native races may be roughly divided into the Carib, Arawak, Tupi-Guarani, and Tapuyan or Ges stocks, and among these we find the characteristics of the Mongolian and Proto-European elements which go to make up the Amer. red race. Constant wandering, intercrossing, regrouping, and other causes have contributed to racial confusion. The Arawaks are widely distributed over an area extending from the R. Paraguay to the extreme N. of the S. Amer. continent, the Tupi-Guarani occupy a ter. as vast as that between the Rs. Maroni in Fr. Guiana and the Plate to the S.; the

lying beyond the Rio das Mortes or R. of the Dead, and watered by the Araguaya and Tocantins riva. No successful exploration of these riv. valleys has yet been accomplished by any white man, nor indeed is there any record of any seriously organised attempt, since the time of the old Portuguese pioneers, to do so. An Amer. expedition, which braved the hostility of the Chavantis and other Indian tribes of the region, was massacred to a man in 1897. In 1925, Col. Fawcett, the Eng. explorer, with 2 other men, set out to find a supposed white people in the heart of the continent up the Araguaya R., but was reported lost in the same year. The religion of most of the Arawaks and Tupi centre on the figure of Jurupari, a species of forest demon, whose cult bears a strange resemblance to freemasonry. Should any woman of the tribe see his symbols or the attributes of his ritual, she is immediately poisoned, tribal freemasonry being placed on a masculine basis. The non-aboriginal inhab. of the country are principally of Portuguese origin, but Basque, Slavonic, Teutonic, and Syrian elements are also present. Large numbers of Asiatic settlers,

Jap., Syrian, Chinese, assist to swell the pop. Large Ger. colonies exist in various parts of the country, and indeed Ger. expansion became a feature of modern Brazilian life, the Teuton having turned some of the best parts of the country into veritable national preserves. In 1740 the pop. was estimated at 175,000, three-quarters of which were made up of Indians, Negroes, half-breeds, Mulattoes, Mamelucos (mixture of white and Indians). By 1818 it had grown to about 3,000,000. This figure, however, is exclusive of uncivilised Indians, and it is estimated that of the total pop. at this



E.N.A.

A MEKUBENGOKRA-KAYAPO INDIAN
OF THE MATTO GROSSO

time not more than one-third were free white inhab. The number of slaves was probably greater than the number of free white men, and the remainder of the pop. was made up of freed men and civilised Indians. From 1872 census figures are available and these show the pop. as 10,112,061 in 1872; 14,333,915 in 1890; 17,318,556 in 1900; 23,414,177 in 1910; 30,635,605 in 1920. In 1945 it was estimated at 46,200,000. Portuguese is the official language. Ger. and It. are also spoken in the S.

Administration.—The United States of B. are divided into 20 states, each with its own constitution and separate administrative and legislative and judicial systems, and united in a federal gov. The names of the states are as follows: Alagoas, Amazonas, Bahia, Ceará, Espírito Santo, Goyaz, Maranhão, Matto Grosso, Minas Gerais, Pará, Paraíba, Paraná, Pernambuco, Piauí, Rio de Janeiro, Rio Grande do Norte, Rio Grande do Sul, Santa Catharina, São Paulo,

Sergipe. In addition to the states, there is the federal dist. of the city of Rio de Janeiro, Acre ter., and Região da Serra dos Aimores, a ter. In dispute between the states of Minas Gerais and Espírito Santo. Of these the oldest is the ter. of Acre on the frontiers with Peru and Bolivia. Five other frontier ters. under federal administration were created by decree in 1943 and were made up of areas taken from existing states. The names given to them are Amapá, Rio Branco, Guaporé, Ponta Pora, and Iguaçu, and they border on the frontiers with Fr. and Dutch Guiana, Venezuela, Bolivia, Paraguay, and Argentina. The is. of Fernando Noronha in the S. Atlantic was also declared a federal ter. in 1942 as a result of its strategical importance.

A new constitution, restoring democratic gov., was created by decree on Mar. 1, 1945. This constitution envisaged a Chamber of Deputies, each state returning a number of deputies (not more than 35 or less than 5) in proportion to its pop. The Federal Council was to consist of 2 representations from each state and from the federal dist., their term of office being 6 years. The vote was given to all Brazilians of both sexes over 18 years of age. This constitution was modified as a result of the election of Gen. Dutra to the presidency in 1946. Rule by decree finished on Sept. 18 (1946), when the new constitution was promulgated. Under it the presidential term is reduced to 5 years; but the powers vested in the president, including the right to choose his own Cabinet, are still the pivot of a system in which the features of presidential gov. as practised in S. America—including a strong presidency—are substantially preserved. But the new constitution expressly recognises freedom to engage in party politics, from which only parties opposed to democratic gov. are excluded. There is considerable modification of the clauses of the previous constitution, which stipulated the progressive nationalisation of banks, insurance companies, and public services operated under concession. In prescribing that ordinary legislation shall devise the rules governing these entities, the 1946 constitution has lost some of the hotly disputed nationalism which characterised both the 1934 model and its own original draft.

Religion.—In 1889 connection between Church and State was abolished, it was restored by the 1934 constitution, but again abolished in 1946. The religion is preponderantly Rom. Catholic, and B. is represented at the Vatican. There are 3 Rom. Catholic archbishoprics. Protestants in B. number well under 200,000, divided among a number of evangelical sects. There are also a number of Buddhists and Muslims.

Education.—Education is free throughout B., and in some states is compulsory. The univ. of B. is located in Rio de Janeiro, and was founded on Sept. 7, 1920. There are also 3 univs., privately conducted, at Bello Horizonte, Curitiba, and Porto Alegre. There are (1946) some 40,000 primary schools and 800

secondary schools, together with a number of commercial and industrial schools.

Armed Forces.—Under the military law of 1923 military service is obligatory on all Brazilians from 21 years of age to 44 years: 1 year being spent in the ranks, and the remaining years in the first and second line reserve. By decree (Jan. 9, 1945) the age of compulsory service was extended to cover the years 18 to 44. Peace-time strength of the army is about 90,000 all ranks. The navy is in a high state of efficiency, the revolts of recent years notwithstanding, and the whole navy was reorganised under a U.S. mission, with U.S. armaments and materials. Its prin. object is defence of B.'s enormous coastline. It consists of 2 battleships (19,000 tons displacement), 3 small protected cruisers, 12 destroyers, a coast defence vessel (3000 tons), 3 riv. monitors, 4 submarines, and a number of smaller craft and riv. boats. Six more destroyers are being built in B. The personnel of the navy amounts to about 8000 men besides officers. There is an air force with a strength of 5000 personnel; this was made independent of the army or navy in 1940.

Communications.—There are nearly 22,000 m. of railway, of which some 400 m. was placed under construction in 1941 to link B. with Bolivia (Santa Cruz). Air services within the country are maintained by 5 national air lines. In normal times Brazilian ports clear some 52,000,000 tons.

Towns.—In the prin. cities of B., modern civilisation may be seen at its best in S. America, the police, sanitary, hospital, and other services being of the most advanced description, and equal to those of the first European cities. The cost of living is high. The Brazilians of the cities are cultivated, and passionately attached to literature, music, and the arts, and national expansion on those lines has been rapid. Rio de Janeiro is the cap. city (pop. 1,903,100). Other large cities are: São Paulo (1,408,500), São Salvador da Bahia (314,300), Recife (376,800), Belém (309,000), Porto Alegre (294,500), Belo Horizonte (226,000), Fortaleza (194,000), Niteroy (153,000), Maceio (145,000), Curitiba (151,600), Santos (110,000).

History.—B. was discovered by Pedro Cabral, a Portuguese navigator, on Apr. 25, 1500. Adventurers soon swarmed into the country, over which a governor-general was appointed in consequence of their irregularities. The Fr., Sp., and Dutch made many attempts to wrest the land from its original colonists, but all of these were unsuccessful, and the invaders finally rebuffed, a period of peaceful development set in. In 1699 the goldfields of Minas Geraes were discovered, and the interiors of the states of Bahia, Goyaz, and Matto Grosso were opened up and settled by groups of adventurers called Bandeirantes, who were attracted to these regions by stories of the fabulous wealth they were said to contain. In 1808 Brazilian ports were opened to European commerce, and in 1821 a constitution was

granted by the Portuguese Crown, but the Portuguese Cortes afterwards repudiated it.

By the declaration of the independence of B. by the patriotic young prince regent, who proclaimed himself as Pedro I. In 1831 he was compelled to abdicate, and the second and last emperor came to the throne in 1843. In 1865 the Paraguayan war commenced, and was carried on until 1870, by which time the pop. of the rival state had become practically decimated. It cost upwards of £63,000,000, and many valuable lives. In 1888 slavery was abolished, and in 1889 the emperor was forced to leave B., and a republic was proclaimed. Under a new and enlightened constitution and a succession of patriotic presidents, B. enjoyed a season of peace and prosperity such as was not experienced since its colonial times. In 1904 the third Pan-Am. congress was held in B., and did much to bind closer the bonds existing between her and her neighbours. In the First World War B. remained neutral for more than 3 years. She had a much closer intellectual and cultural affinity with France than with Germany. A pro-Ally league was formed soon after the outbreak of hostilities and material aid was furnished to the Red Cross organisations of the allied forces. But the fact that an important part of the immigrant pop. of B. was Ger. added to the difficulties of the Brazilian Gov. B. protested against the Ger. announcement of unrestricted submarine warfare in Jan. 1917 and the persistence of Germany in that policy led to the sinking of Brazilian ships in 1917. This caused the severing of diplomatic relations. Some 50 Ger. vessels which had been confined to the Brazilian harbours were seized by the Brazilian Gov. B. still remained neutral even after the entry of the U.S.A. into the war, and on Apr. 6, 1917, she issued a declaration of neutrality. But when it became evident that Germany did not intend either to give up her submarine policy or to make reparations for the Brazilian ships which had already been sunk, the declaration of neutrality was revoked. More Brazilian ships were sunk, and on Oct. 26, 1917, Congress adopted a resolution recognising the existence of a state of war with Germany. Brazilian aviators joined the allied armies and a naval squadron was dispatched to European waters to co-operate with the allied fleets. Besides these, a number of hospital units and doctors were sent to Europe. The years following the war were characterised first by a period of reckless prosperity under boom conditions during the presidency of Dr. Epitácio da Silva Pessoa (1919-22), and secondly, by a period of financial depression during the presidency of Dr. Artur Bernardes (1922-1926). The Gov. was, however, strong enough to survive a serious military uprising in 1924, and in the elections of 1926 Dr. Washington Luiz Pereira da Souza was elected president unopposed, and great advances were expected. Delayed reforms, however, precipitated a revolution against the regime of Dr.

Washington Luiz in Oct. 1930. In that month civil war broke out. The revolution, which began in the Rio Grande do Sul, had been 3 months in preparation, but despite rumour, the secrecy of the revolutionaries' plans deceived the Gov., and though federal troops were concentrated in Porto Alegre in the previous Aug., these were withdrawn in Sept. On Oct. 3, Senhores Flores da Cunha, Oswaldo Aranha, with a number of officers made their final arrangements for arming the civil guard, attacking the general barracks, and seizing the arsenal. The federal leader, Gen. Gil de Almeida, and his forces were taken by surprise; the barracks and arsenal soon fell, and a number of federal troops, including a battalion of sharpshooters, went over to the revolutionary movement though only after a stout resistance. Meanwhile the branch offices of the Bank of Brazil, the postal dept., and other prin. offices were occupied by the revolutionaries, and popular enthusiasm for the movement increased, thousands volunteering for service in response to a revolutionary call for recruits. Beyond the limits of Rio Grande some 50,000 men were soon in the field and half that number in training. By Oct. 24 the movement had secured the desertion of the garrison of Copacabana Fort, Rio de Janeiro, and alarm, aggravated by revolutionary literature, scattered by planes, spread through the cap. When soon afterwards the cap. rose in revolt, the hostilities ceased, and Dr. Luiz was transferred a prisoner to Copacabana Fort, power passing to Dr. Getúlio Vargas.

Throughout 1931 Vargas's provisional gov. ruled by decree, the national and state legislatures being dissolved pending the framing of a new constitution and electoral law. Elections for a constituent assembly were held in 1933, and the assembly promulgated the constitution of July 16, 1934. Dr. Vargas was elected president and assumed office on July 20. The following year (Nov. 1935) a 'communist revolution,' as it was called, was the occasion for placing the country under semi-martial law, which continued for 2 years, and amounted to a 'state of war' in 1937 during the time of the campaigns for the elections fixed for Jan. 1938. On Nov. 10, 1937, however, President Vargas by a *coup d'état* closed Congress and abolished the former political parties, issuing a new constitution for a corporative state, pending popular approval of which he became virtual dictator. The former Congress, consisting of a Senate and a Chamber of Deputies, was replaced by a single 'parliament' combining a Chamber of Deputies and a Federal Council, the latter consisting of representatives elected by the state assemblies plus 10 members nominated by the president. The new constitution was held to have leanings towards Fascism, but this was denied. The following year relations between Germany and B. became strained as a result of suspected Ger. complicity in the so-called 'Green-Shirt' revolt led by Salgado and the Integralist party.

This was rigorously suppressed. Vargas pursued a policy of economic nationalism together with the centralisation of industry, and he set in hand the gradual reduction of the export taxes between the states of the union. In April 1938 the petroleum industry was nationalised. State autonomy was further curtailed the following year. During the early years of the Second World War B. strengthened its defences, and President Vargas took measures to counter pro-Axis propaganda and to renew economic and military ties with the U.S.A. B. entered the war against Germany and Italy on Aug. 22, 1942, and on Feb. 6, 1943, declared adherence to the Atlantic Charter, extending the declaration of war to include Japan. A Brazilian expeditionary force served on the It. front, and in the supply of minerals, rubber, and other raw materials B. made a notable contribution to the war effort of the United Nations. On Dec. 29, 1943, a covenant was also signed between B. and Portugal, strengthening the cultural ties between the 2 countries. On Mar. 1, 1945, President Vargas signed a new constitution and undertook to make considerable concessions towards popular gov. In Apr. an amnesty of all political prisoners was declared, and the president signed a decree to enable presidential elections and elections for Congress to be held in Dec. On Oct. 30, however, Vargas was compelled by a military *coup d'état* organised against him to relinquish power in favour of Dr. José Linhares, president of the Supreme Court. The election held on Dec. 2 resulted in the elevation to the presidency of Gen. Enrico Gaspar Dutra, who had been minister of war from 1926 to 1945. He was the head of the newly formed Social Democratic party which stood, *inter alia*, for the formation of a federal democratic republic to be brought about as the result of constitutional reform. He was the first president to be elected by popular vote since 1926. The Constituent Assembly met in Feb. 1946, with the task of drawing up a new constitution, which superseded the suspended 1934 constitution in Sept. 1946. In 1947 B. outlawed its Communist party, and ordered the suspension of the Communist-controlled B. Workers' Confederation and all unions affiliated with it. In Oct. (1947) diplomatic relations with Russia were severed.

Bibliography. DESCRIPTIVE: Maria Graham, *Journal of a Voyage to Brazil and Residence there during the Years 1821, 1822, 1823*, London, 1824; Agassiz, *Journey in Brazil*; Bates, *Naturalist on the River Amazons*; Burton, *Explorations of the Highlands of Brazil*; Sant' Anna Nery, *Land of the Amazons*, London, 1901; H. Savage Landor, *Across Unknown South America* (2 vols.), London, 1913; T. Roosevelt, *Through the Brazilian Wilderness*, London, 1914; E. C. Buley, *North Brazil*, London, 1914, and *South Brazil*, London, 1914; J. D. McEwan, *Brazil*, Montreal, 1918; W. H. Koebel, *The Great South Land: the River Plate and Southern Brazil of To-day*, London,

1919; H. Schüler, *Brasilien*, Stuttgart, 1919; C. S. Cooper, *The Brazilians and their Country*, London, 1920; Konrad Güenther, *Das Antlitz Brasiliens*, Leipzig, 1927, and *A Naturalist in Brazil: the Flora and Fauna and People of Brazil* (trans. by B. Miall), London, 1931; C. M. D. Carvalho, *Geographia do Brazil*, Rio de Janeiro, 1927. GENERAL: J. C. Oakenfull, *Brazil: a Century of Independence, 1822-1922*, Freiburg, 1922; Reginald Enoch, *The Republics of Central and South America*, London, 1913; H. G. James, *Brazil after a Century of Independence*, New York, 1925; Pierre Denis, *Brazil*, 5th ed., London, 1926; James and Martin, *The Republics of Latin America*, London, 1925; Roy Nash, *The Conquest of Brazil*, New York, 1926, London, 1927. HISTORICAL: Robert Southey, *History of Brazil*, London, 1810-19; D. P. Kidder and J. C. Fletcher, *Brazil and the Brazilians*, Boston, 1879; Fernandez Gama, *Memórias Históricas de Pernambuco*, Recife, 1844; A. Flalho, *História da fundação da Republica*, Rio de Janeiro, 1891; J. P. de Oliveira Martins, *O Brasil e as Colonias Portuguesas*, Lisbon, 1887; B. Mossé, *Dom Pedro II., Empereur de Brésil*, 1889; M. de Oliveira de Lima, *Formation historique de la Nationalité brésilienne*, 1911; P. A. Leal, *História Constitucional de Brazil*, Rio de Janeiro, 1915; C. J. do C. Baratta, *História Ecclesiastica de Pernambuco*, Recife, 1922; C. M. Dias and others, *História da Colonização Portuguesa do Brasil: Introduction*, Lisbon, 1924, *ibid.* (3 vols.), Rio de Janeiro, 1921-24; H. Handelman, *História do Brasil* (trans.), Rio de Janeiro, 1931. ECONOMIC, SOCIOLOGICAL, etc.: R. C. Simonsen, *História Economica do Brasil, 1500-1820*, São Paulo, 1937; P. Walle, *Au Brésil du Rio São Francisco à l'Amazonie et Au Brésil de l'Uruguay au Rio São Francisco*, Paris, 1912; Gilberto Freyre, *Região e Tradição*, Rio de Janeiro, 1941; *id.*, *Brazil: an Interpretation*, New York, 1945; *id.*, *The Masters and the Slaves: a Study in the Development of Brazilian Civilisation* (trans. by Samuel Putnam), New York, 1946. LITERATURE, MUSIC, etc.: V. Oban, *Littérature brésilienne*, Paris, 1914; I. Goldberg, *Brazilian Literature*, 1922; Marie R. Wright, *The New Brazil*, Philadelphia (painting and music), 1907; Renato Almeida, *História da Musica Brasileira*, 2nd ed., Rio de Janeiro, 1942; B. de Magalhães, *O Folclore no Brasil*, Rio de Janeiro, 1928. Also *Handbook of Brazil*, pub. by International Bureau of Amer. Republics, Washington, and *Brazil, 1943: Resources and Possibilities* (in Portuguese and Eng.), Ministry of Foreign Affairs, Rio de Janeiro, 1945.

Brazil Cabbage, or **Chou Caribe**, term applied to sev. species of *Araçá* of the genera *Xanthosoma*, *Colocostia*, and *Caladium*. They have edible rhizomes and the leaves are also eaten.

Brazilian Grass, term applied to a Cuban species of *Palme* known as *Chamærops argentea*, and the adjective is therefore inaccurate. The leaves of the palm are

cut into strips and used in making chip hats. *C. humilis*, an allied species, is the only European palm.

Brazil Nut, seed of the fruit of a plant belonging to tropical S. America. The plant is a species of *Lecythidaceæ* in the genus *Bertholletia* (*q.v.*).

Brazil Wood, name given to the heartwood of sev. leguminous plants of the genus *Cæsalpinia*. *C. crista* and *C. braziliensis* are S. Amer. species which yield a red dye.

Brazing, process of uniting 2 pieces of brass or copper, or either, by means of soldering, i.e. the application of a metal composition similar in its properties to cement. The ingredients of the solder vary with the metals to be joined. When the process is completed the join is of extraordinary strength. See also **SOLDER** and **SOLDERING**.

Brazos, riv. of Texas, U.S.A. It rises in the Staked Plain and runs 950 m. in a S.E. direction, emptying itself finally in the gulf of Mexico. It is navigable for 40 m. at all times, but at high tide for 250 m.

Brazza, or **Braço**, the most important of the Dalmatian Isles, in the Adriatic Sea. It is also the most thickly populated. Its area of 152 sq. m. is mountainous in character, the highest point reaching 2578 ft. There are quarries of the finest marble. The chief tn. is San Pietro. Pop. of is. 20,000.

Brazza, Pierre Paul François Camille (1852-1905), Fr. explorer and minister, the founder of the Fr. Congo, of Ft. birth, b. on board ship in Rio de Janeiro harbour (became a Fr. citizen while engaged in the exploration of the Ogooué (or Ogowé). He made the exploration of the Ogowé in 1878, and later received from the Fr. Gov. 100,000 francs for exploration in the Fr. interest in the Congo. Here he secured large tracts of land for France and estab. many stations. He returned again later, and within the space of 2 years estab. 22 outposts, of which Franceville was the chief, distributed over a space of 500,000 sq. km. In this vast hastily drawn chess-board he made each of the settlements a regularly functioning centre of authority. In 1885 b., following a new trail, estab. on Lake Chad the junction of Fr. possessions in the Congo, the Sudan, and N. Africa. He was made governor of the Fr. dependency of the Congo in 1886. That post he held till 1898, when an inquiry was instituted regarding criticism of his administration. The fault was found, however, in France itself, and he was accordingly acquitted. In 1905 he organised an expedition to ascertain the truth of certain rumours of cruelty to the natives, and on the completion of his report d. at Dakar. See Jacques Stern, *The French Colonies Past and Future*, 1944.

Brazzaville, cap. of Fr. Equatorial Africa, situated on the r. b. of the R. Congo, about 300 m. from its mouth; on the frontier between Fr. Middle Congo and Belgian Congo. It is connected with the W. coast by railway. Following Brazza's negotiations with the celebrated

King Makoko, of the Congo, the Fr. flag was hoisted at N'Tamou, the key to the conquest of the Congo, and this place later became B. A Pasteur institute and numerous medical organisations in B. (and other centres in Fr. Equatorial Africa) are engaged in improving the deplorable health conditions of this tropical region. Pop. 4000.

Brčka, tn. of Yugoslavia, situated on the r. b. of the R. Save, in the prov. of Dolnja Tuzla. It is 74 m. N.E. from Sarajevo. Pop. 7000.

Breach, legal word connoting the violation of a duty imposed by the terms of a written agreement or by the policy of the law. A B. of Contract is where 1 of 2 parties to a contract or an actionable agreement breaks an obligation which the contract or agreement imposes upon him. The consequences of a B. of contract are that a right of action is at once conferred upon the party injured by the B., while in some cases, *e.g.* in contracts to supply a consignment of goods by instalments, the injured party is exonerated or 'discharged' from performing the rest of the obligations imposed upon him. Not every B. of contract amounts to a B. of a vital condition so as to entitle the injured party to rescind. Some Bs. are said to be merely of 'warranties' as distinct from conditions, and entitle the injured party to sue for damages only. A B. of Covenant is where a party breaks a clause in an agreement (usually under seal) whereby the covenantor either vouches for the truth of certain facts or binds himself to perform or give something to the covenantee. B. of Promise means the B. of any promise the fulfilment of which is legally enforceable, but the phrase has become especially associated with the B. of a promise to marry. A B. of Trust means the non-fulfilment by a trustee of duties accepted by him, and imposed upon him by the terms of the trust instrument. In cases of fraudulent conversion of trust property the trustee is liable to criminal as well as civil proceedings. B. of the Peace in criminal law connotes any act producing or tending to produce a B. of the king's peace, *e.g.* murder, affray, assault, challenge to fight either by word or letter. The king's peace is a comprehensive notion by the aid of which the Crown establishes a right to be a party to all criminal proceedings or pleas of the Crown. It has its origin in anct. feudal times when the king was actual overlord of the realm, and an affray therein was therefore justifiably deemed to be analogous to an insult offered to a guest in a private house. Prison B. denotes an actual breaking out of prison as distinct from a mere escape. The consequences vary according to the crime for which the prisoner is in custody. Pound B. is the common law offence of rescuing goods from the custody of the law after the officer of the court has impounded them upon a distress. Prosecutions seldom take place, as the landlord can recover treble damages by a civil action. B. of Arrestment in Scots law means the paying away of money in

one's hands on which a legal 'arrest' has been laid, thereby manifesting a contempt for the law.

Breaching Tower, see BEFFROI.

Bread, food prepared by baking flour obtained by grinding cereals as wheat, rye, millet, barley, oats, and maize, or other vegetable products, as beans, peas, tapioca, etc. Bread-making appears to have been practised from the very earliest times, as cakes of barley have been discovered in Stone Age dwellings. Baking was understood by the anct. Egyptians and Chaldeans, and it is recorded of Abraham that he commanded Sarah to make ready 3 measures of fine meal, knead it, and make cakes upon the hearth. The grinding of grain appears to have been one of the duties of the women-folk of anct. households. The primitive mill consisted of 2 cylindrical stones, the upper one revolving about an axis fixed in the centre of the lower one. A hole bored eccentrically through the upper stone admitted the grain, which was thus ground between the flat surfaces of the 2 stones. A handle fixed in the rotating stone enabled the woman to turn it round, and in the case of a large mill the work was performed by 2 women sitting opposite each other. Such an arrangement is referred to in the prophecy 'Two women shall be grinding at the mill; one shall be taken, and the other left.' The Rom. estab. public bakehouses, from which free distributions of B. took place. Throughout Europe the place of B. as the most important food-stuff has been unquestioned from the time of the Rom. empire. In temperate latitudes, by far the most important source of bread flour is the grain of wheat. In more northerly latitudes, rye, oats, and barley are used; maize flour is made into cakes in parts of the U.S.A., and millet B. is used in the S. parts of Europe. Wheat flour consists approximately of starch, 72 per cent; nitrogenous matter, 14 per cent; water, 10 per cent; fats, 2.25 per cent; and mineral salts, 1.75 per cent. When a larger proportion of the outer covering of the grain is milled, the relative amounts of starch, mineral matter, etc., are altered. The essential stages in the making of ordinary B. are the making of dough, in which the flour is wetted, salt added, and yeast introduced; the 'rising' of the dough, when the yeast multiplies in the material, giving rise to little vesicles or bubbles of carbonic acid gas; and the actual baking. The effect of yeast is to make the B. light, and B. thus prepared is the chief food of civilised peoples, being in general more palatable and digestible than the closer-textured, unleavened variety. In making what is called aerated B., the carbon dioxide is first dissolved in water under pressure, and the flour mixed with the water while still subjected to pressure. The dough is ejected from the machine and is cut into loaves as it emerges; it then 'rises' owing to the liberation of bubbles of carbon dioxide in the interior. Baking powders are also used for the purposes of causing bubbles of gas in the dough. They consist

of 2 substances such as sodium carbonate and tartaric acid, with perhaps an admixture of flour to effect a more uniform distribution. The powder is mixed with the flour, and when kneaded with water the carbonate is acted upon by the acid, with the result that carbon dioxide is liberated. As tartaric acid is frequently impure, other baking powders containing phosphoric acid or alum and potassium bisulphate are frequently used. In mixing the dough on a large scale a 'sponge' is first prepared. This consists of part of the flour to be used mixed with a large proportion of water and the amount of yeast required for the whole batch, together with a small quantity of salt. The sponge is allowed to ferment for from 6 to 10 hours, and then mixed with the rest of the flour, water, and salt. The kneading which is required for the mixing of the dough is often done in a machine consisting of a trough or cylinder in which blades revolve, thus thoroughly incorporating the different materials. The baking is done in an oven consisting of a vaulted chamber about 10 ft. long, 8 ft. wide, and 2½ ft. high. The heating is effected by a furnace or by means of superheated steam carried in pipes on the top and bottom of the chamber. B. in Great Britain must be sold by weight, and must not be adulterated by substances specified in the Weights and Measures Act, 1889. See T. B. Wood, *The Story of a Loaf of Bread*, 1913; D. W. Kent-Jones, *The Practice and Science of Bread-making*, 1934.

Breadalbane, the title assumed by John Campbell, son of Sir John Campbell, about the year 1677. He had played an important part in the political hist. of Scotland, and practically by purchase became earl of Caithness. He was, however, compelled to relinquish this title, and was in 1681 created earl of B. and Holland, and received also a viscountcy and 4 baronies in the peerage of Scotland. Although nominally of the Presbyterian faith, he helped Lauderdale, and on the accession of William III. was one of the few men of authority in Scotland. He was entrusted with the task of pacifying the highlands, and succeeding in his object, gaining wealth in the process. He was partially responsible for the Glencoe massacre, although his share in the atrocity did not become known until later. He sat later as a representative peer in the Brit. House of Lords after the Union, although he had not voted for the Union. Later, during the '75 he gave assurances of loyalty to both sides, and endeavoured to make as much as he possibly could out of it. He d. in Mar. 1717. He was succeeded by his second son, who became earl of B., and who d. in 1752. The third earl, the eldest son of the second, was noted as a diplomatist who occupied high positions in the diplomatic service, being ambas. to France and Russia. He was a strong supporter of Sir Robert Walpole, and d. in 1782. All his sons having d. before him, he was succeeded by a cousin, who became marquess of B. in the Eng.

peerage. With the decease of the second marquess the marquessate became extinct, but the earldom passed again to a cousin, whose family still retain the title, and to whom the marquessate was restored in 1855.

Breadalbane, mountainous dist. of Perthshire, Scotland, lying for the most part around Loch Tay. It covers over 1000 sq. m. In it are sev. peaks of the Grampians, Ben Lawers (3984 ft.) being the highest. There are deer forests and fishing in Lochs Tay and Rannoch.

Bread-fruit is obtained from *Artocarpus incisa*, a tropical species of Moraceæ which flourishes chiefly in the S. Sea Is. The fruit is spurious and forms a sorosis;



BREAD-FRUIT

it is roasted by the natives and eaten as bread. The Nicobar B. tree is *Pandanus odoratissimus*, a species of Pandanaceæ, and the Australian B. tree is *Gardenia edulis*, a genus of Rubiaceæ.

Bread-nut, fruit of *Brosimum alicastrum*, a tree of the order Moraceæ, which grows in tropical America and the W. Indies. This fruit is an achene, and is edible when cooked. The Barbados B. is a variety of *Artocarpus incisa*, the bread-fruit (q.v.).

Bread-root, or prairie turnip, name given to the edible tuberous roots of *Psoralea esculenta*. The plant is leguminous, and occurs in N. America. The yam (q.v.) has similar roots, and both are eaten boiled or raw.

Breadth (in art), a term applied to a picture indicating a certain effect of grandeur. If a picture possesses breadth no one detail strikes the spectator more than another, but he views the picture from a general standpoint. This effect is sometimes obtained by putting a few details as possible into a picture, a great deal being dependent upon the portraying of light and shade. Turner's pictures are among those specially characterised by their breadth of treatment.

Bread-tree, sev. species of *Encephalartos*, an African genus of Cycadaceæ. The

pith is rich in starch, and is made into meal by the Kaffirs. *E. caffer* is known as Caffre, or Kaffir, Bread. Also the name of a small evergreen tree, native of Guluana, of the natural order *Cinchonaceae*. It has cream-coloured tubular flowers, opposite oblong leaves and an edible fruit.

Breakbone Fever, see DENGUE.

Break-joint (in architecture), to dispose the stones or bricks of a building so that no 2 joints occur immediately over each other. Also (as noun) the joint of a brick coming opposite the centre of bricks above and below. The term for such overlapping is a 'bond.' This greatly strengthens the structure.

Breakspear, Nicholas, see ADRIAN IV.

Breakwater, barrier erected for breaking the force of water on the coast or outside a harbour and producing a calm within. Natural Bs. also exist, such as the Isle of Wight, which occupies such a position as to protect Portsmouth and Southampton. Piers may also be constructed so as to serve also as Bs., but the term B. only strictly applies to a structure built solely for protection, and not for traffic. Bs. are of 3 classes, according to their structure: (1) Those of the first class consist of vertical structures of built masonry for arresting the onward movement of the waves. The B. at Aberdeen and the Dover Admiralty pier are examples of this class. (2) Sloping structures of rubble stones dropped into the sea from floating barges or timber stages. These have a sloping face each side. The Plymouth B. is an example of this class. (3) Composite Bs. involving both the above principles, i.e. they are partly vertical and partly sloping. Cherbourg B. is an example of this class.

Plymouth Harbour is one of the finest Bs. in existence. The designs are by Rennie, and it was begun in 1812 at an estimated cost of £900,000. The stone was obtained from a neighbouring quarry, transported by rail and shipped in vessels fitted with trapdoors and deposited through these in the shape of a huge mound. The mound was to be 10 ft. above low water, with a width of 30 ft. on top. The movement of the waves and constant storms, however, severely changed its shape. In 1824 about 800 yds. of the finished work was overthrown by a severe storm. After this it was raised 10 ft. higher, and the width extended to 45 ft., having a seaward slope of 5 to 1. It was finished in 1841 at a cost of £1,500,000. The B. is 1 m. long, having a central portion 1000 yds. long. Two wings of 350 yds. long extend at the ends of this at a slight angle. The water space protected is about 1120 ac. The B. requires constant repair.

Holyhead B., designed by Randell, was erected for the purpose of converting Holyhead into a harbour of refuge. The stone was obtained from Holyhead Mts., and was run out upon a timber staging and dropped into the sea. The rubble reached up to the level of high water, and has assumed a seaward slope of 1 in 12. The inner slope is 1½ to 1. The B. shelters an outer roadstead of 400 ac.,

and an inner roadstead of 270 ac. The stone was obtained by blasting, 1 explosion of 21,000 lb. of gunpowder displacing 130,000 tons of stone. The estimated cost was £1,500,000. On the death of Randell the work was continued by Sir John Hawkshaw, and was finished in 1873. On it stands a lighthouse rising to the height of 70 ft. above high water.

The Portland B. acts as a B. to the stretch of water between the coast of Dorset and the peninsula of Portland. It was begun in 1849. There is an abundance of stone in the neighbourhood, easily quarried, and the steep slopes afford facility of transport. The B. stretches due N. for more than 2 m., with 1 or 2 openings for the entrance and exit of ships. The work was finished in 1872, and consists of a rubble-stone bank surmounted by vertical walls from the low-water level.

Cherbourg B. is perhaps the largest and most costly ever erected. According to the original proposal made by M. de Cessart numbers of hollow cones formed of timber framing were to be sunk as close to one another as possible, and then filled with stones. These cones, numbering about 64 and measuring 70 ft. high with a base diameter of 150 ft., were to form a nucleus to the stone B., and to prevent displacement of the stones by the action of the waves. This plan was abandoned in 1785 owing to the damage done to them during stormy weather, and the stone B. was continued without the aid of the cones. It was finished in 1853 at a cost of £2,500,000. Fortifications have been added since then upon the upper works. It is nearly 2½ m. long, 300 ft. wide at the base, and 31 ft. wide at the top. The water space included within and protected by the B. is about 2000 ac.

Dover B. was built up by means of solid ashlar brought from the bottom by means of the diving bell, with the interior formed of blocks of concrete. The area enclosed is about 685 ac. It cost about £3,500,000, and has been extended twice.

Alderney B. was designed for the Gov. by James Walker in 1847. It is 4500 ft. long, but the outer portion has been abandoned owing to the difficulty of maintaining it. It was completed in 1864, and the total cost of the structure was over £1,500,000.

Colombo Bs., proposed in 1866 to afford protection for shipping, were begun in 1875, when King Edward VII., then prince of Wales, laid the foundation stone. In 10 years' time the S.W. B., 4212 ft. long, was completed. In 1891 2 additional Bs. were provided, the N.W., which was an is. B., and the N.E., which jutted out from the land. The length of the former was 2670 ft., and of the latter 1200 ft. These were completed in 1906 at a cost of about £170 per ft.

Marseilles B., begun in 1845, has a length of about 3½ m. In its construction it consists of a layer of about 10 ft. of small rubble at a depth of 55 ft. below sea level, covered by layers of natural stone weighing from 2 to 80 cwt. each,

and above this are artificial blocks weighing about 33 tons each. The slope is graduated in such a way that the waves are sharply cut at a point where their strength would be most effective, and their crests therefore fall harmlessly upon the masonry above.

Valparaiso B. presented especial difficulties in its construction, owing to the soft mud of the sea-bottom in the harbour and to the frequency of earthquakes in the vicinity. The work designed by Adam Scott, after sev. other schemes had been mooted, was carried out between 1912 and 1920. Where there was a good sandy foundation at the beginning of the work, a rubble mound was constructed with a strong blockwork structure above; but where the treacherous muddy base presented itself, huge monolithic blocks weighing over 12,000 tons took the place of the ordinary blockwork.

The introduction of concrete made of Portland cement has in recent years modified the construction of Bs. Cement is mixed with sand, gravel, and broken stone in various proportions. Sometimes the concrete is made up into large blocks and deposited under in low water. At other times it is lowered down in large bags, which are opened under water and thus form a mound or basis upon which to work. See B. Cunningham, *Harbour Engineering*, 1908, 1928; E. Latham, *Marine Works*, 1926; R. N. Stroyer, *Concrete Structures in Marine Work*, 1934.

Bream, name applied to many species of fishes, the fresh-water Bs. and sea-Bs. being absolutely distinct. The former belong to the family Cyprinidae, carp-like fishes, and are distinguished by their compressed abdomen and elongated anal fin. Among these are *Abramis blicca*, white B., *A. brama*, common B., *A. crysoleucas*, Amer. shiner. The sea Bs. constitute the family Sparidae, which are perch-like carnivorous fishes, and, unlike *Abramis*, are mostly edible. Representative species are *Cantharus lineatus*, black sea-B. or old wife, *Sargus ovis*, sheep's head, and *Pagellus centrodontus*, common sea B. or chad.

Breast, the external part of the thorax lying between the neck and the abdomen, also applied particularly to the *mammæ* of women. See MAMMARY GLANDS.

Breast-feeding, see under CHILD.

Breasted, James Henry (1865-1935), Amer. historian, b. at Rockford, Illinois, Aug. 27. Educated at N.W. (N. Central) College, Chicago Theological Seminary, and Yale—finishing there in 1890. Became prof. of Egyptology and oriental hist., Chicago Univ., in 1905. In 1900 he was in Europe at request of various museum authorities, arranging for preparation of an Egyptian dictionary. Many publications, including: *A New Chapter in the Life of Thutmose III.*, 1900; *Ancient Records of Egypt*, 1906; *A History of Egypt*, 1905; *Ancient Times*, 1916 (re-ed. as *Conquest of Civilization*, 1926); *Survey of the Ancient World*, 1919; *Victorious Man*, 1926; *The Dawn of Conscience*, 1933. See C. Breasted, *Pioneer to the Past*, 1947.

Breastplate, a plate of iron or steel

fastened to the chest of its wearer. It formed an important part of the war equipment of anc. times. See CUIRASS.

Breast-wheel, a water-wheel, the axis of which is almost on a level with the surface of the water driving it. The wheel is fitted with a number of flat boards instead of buckets as in an over-shot wheel. The water approaches the wheel through a sluice or shuttle, adjusted to regulate the quantity admitted to act on the wheel; it then falls upon the nearest board and forces it downwards by its weight. The float-boards revolve in a channel which is so accurately fitted that the water is retained between each pair of boards as in a box until it arrives at the lowest point, where it flows away in the escape-stream.

Breath and Breathing, see RESPIRATION.

Breathing Pores, the orifices at the end of breathing tubes in insects. Respiration is carried on by means of the air-tubes which penetrate into all parts of the body from spiracles or pores on the surface of each segment. The spiracles are closed by valves actuated by special muscles. When the valves are closed the air is driven by the contraction of the body into the finer branches of the air-tubes.

Brecan's Cauldron, see CORRIEVRECHAN.

Breccia (It. *brecchia*, pebble, fragment of rock), in geology, term applied to rock composed of angular fragments of a pre-existing rock or of sev. pre-existing rocks, united by a cement of mixed matter. It differs from conglomerate in the angularity of the fragments.

Brecey, tn. in the dept. of Manche, France, situated 27 m. to the S.W. of Saint-Lô. Pop. 2000.

Brechin, tn. in co. of Angus, Scotland. It is situated on the S. Esk, in a position 8½ m. W. of Montrose. Its chief manufs. are linen and paper, while breweries, distilleries, and bleaching works also carry on an extensive trade. The tn. was burned in 1645 by Montrose, and was the scene in 1303 of a famous siege by Edward I. Dr. Thomas Guthrie was b. there. Pop. 6800.

Breckinridge, John Cabell (1821-75). Amer. soldier, b. near Lexington, Kentucky. In 1849 he became a Democratic member of the Kentucky legislature, and from 1851 to 1855 he sat in Congress. In 1856 he was elected vice-president under Buchanan. He strongly favoured the pro-slavery party, and joined the Confederate forces, being created major-general in 1862. He fought with distinction at Stone Mt., Newmarket, and in co-operation with Lee at Cold Harbour. Towards the end of the struggle he was appointed secretary of war to the Confederates. At the close of the war he took refuge in Europe, but in 1868 he resumed his practice of law in Kentucky.

Breckland, a dist. in Suffolk, England, not far from Thetford. It is sparsely inhabited and has lent itself to considerable afforestation development by the Forestry Commissioners in recent years.

Brecknock, or **Brecon**, the cap. of Brecknockshire, Wales, and a municipal

bor. It is situated almost in the centre of the co., at the junction of the Honddu with the Usk, 40 m. from Swansea and 183 m. from London. Its manufs. are coarse woollen goods, hosiery, flannel, etc. There is a fine old church of the Early Eng. style, and the ruins of a castle built in the tenth century. Christ College, a public school for boys, was founded by Henry VIII. in 1541. Mrs. Siddons was b. in the neighbourhood. Pop. 5600.

Brecknockshire, co. of S. Wales, situated between Radnor on the N., Radnor and Hereford on the E., Cardigan and Carmarthen on the W., and Monmouth and Glamorgan on the S. It is the fourth largest co. in Wales, with an area of 469,281 ac. It is extremely mountainous, with very magnificent scenery. The Black Mts. are among the loftiest heights, while the Brecknock Beacons reach nearly 3000 ft. The slope of the co. is towards the E., and the chief rvs. are the Usk and the Wye, with their many feeders. The prin. geological formation is that of Old Red Sandstone, and in the S. there is a belt of carboniferous limestone and millstone grit. To the N. of the co. there are Silurian rocks. The greater part of the dist. is uncultivated; about a quarter is estimated to be tilled. The valleys, which contain rich soil, yield good crops of wheat, barley, rye, oats, peas, potatoes, and turnips; the last, and oats, are especially grown in large quantities. The uplands are pastures for great numbers of sheep, ponies, and cattle, and these with pigs, wool, and dairy produce form the chief trade of the co. The manufs. are flannel and coarse woollen stuffs, etc., and leather. Mining is important, coal and iron being found in great quantities. Also limestone and fireclay are worked. There are large iron works. The Brecon Canal connects with the Bristol Channel. The climate of the co. is moist and healthy. Pop. 38,000. See T. Jones, *History of Brecknockshire*, 1911-30.

Brecon, see BRECKNOCK.

Breda, tn. of Holland, situated at the confluence of the Merk and Aa (2 canalised and navigable rvs.), in the prov. of Brabant. It was once strongly fortified, with the power to flood immediately the tn. There are a fine quay and an arsenal; also there is a prison, with isolated cells numbering 208. The manufs. are carpets, woollen and linen goods, leather, musical instruments, hats, soap, rope, etc. There are dye-works and breweries. B. has had an interesting hist., and has undergone many sieges. It was taken by Prince Maurice of Orange in 1590, by the Spaniards in 1625, and by the Fr. in 1794-95. It was the subject of the Compromise of B. in 1566, the Declaration of B. in 1660, and the Treaty of B. in 1667; the last between England, Holland, France, and Denmark. Pop. 51,000.

Bredasdorp, dist. of Cape Colony, S. Africa. The climate is fairly dry, the average rainfall being less than 20 in., but the B. dist. is the second richest in the Cape—largely due to wool and wheat. The cap. of the dist. is B., which is situated 35 m. S.W. from Swellendam, and is the

most S. of all the small tns. of the Cape, being 26 m. from Cape Agulhas. It has a national park for preserving herds of bontebok. Pop. 3200 (Europeans 1730, native, etc., 1470).

Bredero, Gerbrand Adriaenssen (1585-1618), Dutch dramatist, was a shoemaker's son. In 1611 he dramatised a romance, entitled *Roderick and Alphonsus*. His original genius, however, first showed itself in his *Farce of the Cow*, 1612, and from that time there flowed from his pen a stream of farces, comedies, etc. In his *Jerolimo, the Spanish Brabanter*, he mocked at grandiloquence of the exiles from the S. A contemporary of Ben Jonson, he resembles him in his coarse, ready wit, but unlike him he knew no Lat., and had no humanist sympathies.

Brederode, Henry, Count of (1531-68), Flemish nobleman, b. at Brussels. He was a staunch upholder of the reformed faith, and strenuously opposed the inroads of the Sp. Inquisition in the Netherlands. He drew up the document called 'The Compromise,' and his supporters were nicknamed 'Les Gueux' (the Beggars). The failure of a revolt organised by him compelled him to flee to Germany, where he d.

Bredow, Gottfried Gabriel (1773-1814), Ger. historian, b. at Berlin. He occupied the chair in hist. at the univs. of Helmstadt, Frankfurt, and Breslau. His works include: *Handbuch der alten Geschichte*, *Geographie und Chronologie*, 1799; *Chronik des 19 Jahrhunderts*, 1801; *Grundriss einer Geschichte der merkwürdigsten Völthändel von 1796-1810*, 1810.

Bree, Matthias Ignatius van (1773-1839), Flemish artist, b. at Antwerp. He studied at Paris after having gained for his 'Death of Cato' the second Prix de Rome. In 1804 he became director of the Academy of Fine Arts at Antwerp. Among his notable works are 'The Patriotism of the Burgomaster Van der Werft,' in the tn. hall at Leyden, and 'The Death of Rubens,' in the museum at Antwerp. He encouraged and instructed the younger painters, among whom were Wappers and De Keyser.

Breech, Breechloader, see GUN.

Breeches Bible, another name for the Geneva Bible. It was brought out in 1557 by the Eng. exiles, who had fled from the Marian persecutions to Geneva. Three years later they produced a complete ed. of the Bible. It is so called owing to the statement in third chapter of Genesis, that Adam and Eve took fig leaves and made themselves breeches. A sect of Puritan women took upon themselves (following this literally, as was their custom) to claim the right to wear male attire.

Breede, riv. of S. Africa in the S.W. of Cape prov. Its source is in the Warm-Bokkeveld, and its direction is S.W., then S.E. by E., where it enters the sea at Port Beaufort.

Breeding, in the widest sense of the word, the production of offspring by any method whatever, and includes the multiplication, by fission and budding, of the simplest organisms, as well as the sexual

reproduction of higher animals and plants. It is usual, however, to restrict the use of the term to sexual reproduction, and particularly to that controlled by man for his own purposes. A consideration of domestic animals, garden flowers, and farm crops will reveal man's interest in, and partial control of, B., and the earliest historical records show his attempts to rear cattle and to improve plants.

Most probably primitive man was nomadic, wandering in search of food, and the duration of the periods he spent in various places would have been largely dependent on the food supply. In the course of time it occurred to him to remove vines that were strangling his food plants and to cut down the undergrowth that prevented ready access to them. As a result of improved conditions the growth of desired plants would be improved. Very early in hist., too, man cleared ground, and cultivated crops, and the seeds of these, through variation and heredity, would develop into plants of differing quality. He cultivated the best of these, and by neglecting the others interfered, by artificial selection, with the process of natural selection.

Such early attempts at cultivation were thus the beginning of selective B. A great advance was made when man first realised that he could improve his crops and his herds by making a selection, not only of the kinds of plants or animals he wished to preserve, but also of the individuals with the most desirable qualities. Most probably such deliberate attempts were first made with animals, and man's criterion of the most suitable individuals was based on visible characters. For instance, Jacob chose the speckled cattle, which were vigorous and prolific, while the brown ones he left to Laban (Gen. xxx. 40). By experience, however, breeders have found that although visible characters may be of considerable use, they are frequently misleading, for they may have arisen as modifications due solely to particular environmental conditions operating on the animal, and may be totally unrepresented in its hereditary constitution. Moreover, it is possible for all the offspring of 2 white birds to be coloured, whereas those of other white birds are always white, so that animals with similar visible characteristics may have very different genetic constitutions. Thus for centuries B. has been carried on by a method of trial and error, but long experience has produced results of a very high standard: horse and cattle B. show the success of these empirical methods.

Unfortunately, however, accompanying this real attainment in B., a body of erroneous beliefs and superstitions has grown up, and even now is not entirely eliminated. Such errors frequently accompany experimental work carried on without knowledge of the underlying principles. One very widespread belief was that of 'maternal impression.' It was thought that the developing embryo could be somatically affected through impressions received through the sense organs of the mother. One of the earliest

records of this is that of Jacob placing striped and speckled rods in front of cattle, in the belief that the sight of these markings would, through the mothers, make an impression on the developing embryos and cause the young animals to have similar markings. 'Maternal impression' was long regarded as the explanation of disfiguring birth-marks and of hare-lip, but the theory is quite unsupported by scientific evidence. On the other hand, the importance of prenatal nutrition is fully recognised and in addition to causing physical harm, shock to the mother may so disturb her metabolism that serious interference with the feeding of the embryo may occur.

Another common belief is that in teleogony, the theory that the characters of the male are, after mating, retained by the female and may appear in the offspring of subsequent matings with other males. For instance, if a white mare were mated with a brown stallion and subsequently with a white stallion, any brown colour appearing in the offspring would be attributed to the first mating. Many experiments have been carried out to confirm this belief and, as a result, it may be stated that there is no justifiable foundation for the theory of teleogony nor of 'male infection' which is the corresponding retention by the male of characters of the female of a previous mating.

The popular objections to in-B., well illustrated by the veto imposed by the Church on marriage between close relations, has also been shown to be without foundation in fact. Provided that the stock used is free from obvious defects, in-B. can be carried out successfully, and is often practised by dog breeders and similar fanciers; there is no reason to think that their results are inapplicable to man.

The plant breeder on the whole appears to be free from popular superstition relating to plants, but nevertheless plant B. generally has not reached such a high standard of perfection as animal B. This is partly because, compared with animals, plants are so prolific that a certain amount of waste seems unimportant and from a great number of seeds selection is more difficult, whereas animals usually breed more slowly than plants and in such relatively small numbers that selection is much more limited. Moreover, environmental changes such as extremes of temp., the amount of light, and the constitution of the soil, influence plants far more readily than animals, partly because the higher plants, and many of the lower ones, are unable to move from place to place to gain protection and suitable food. In spite of these difficulties, however, during the last century plant B. has made such rapid progress that in many instances it has reached a very high standard.

In Egypt and China rice has been cultivated for centuries and comparatively early in hist. the importance of stamen and pistil was recognised. Over 2000 years ago Theophrastus described the pollination of the female flowers of the

date palm by natives hanging or shaking over it a branch bearing male flowers. The Chinese are said also to have experimented with hybridisation of flowers, and much later in hist. the Roms. hybridised roses, but the earliest records of systematic attempts were those of the Dutch, who cultivated and produced many new varieties of tulips, primulas, and hyacinths in the seventeenth century. Van Mons (1785) at Louvain, by systematic cultivation, produced nearly 500 new varieties of pears in about 40 years. Contemporaneously, Cooper in the U.S.A., Knight in England, and Thaer in Germany made attempts to improve crops. Thaer, by his insistence on the value of selection, did much to make agriculture a scientific study. Cooper drew attention to the importance of choosing crops suitable to the soil instead of experimenting with different strains of seed in the hope of getting an improved crop of the same nature as one which had already done badly.

Numerous experiments on wheat B. were made in the nineteenth century with the aim of producing good pure varieties. Hallett made a great advance in his recognition of the fact that the best-looking grain was not necessarily the grain with the best genetic constitution. He therefore tested every grain from an inflorescence, and worked on the theory that the best grain from the best inflorescence would develop into the best plant. From the resultant plants he selected the best, and, by continuing this method for sev. years, was able to show that the method of continuous selection gave little or no increase in yield when applied to pure strains, though with mixed strains the increase was considerable. De Vilmorin worked on similar lines and stressed the importance of testing the progeny before assuming that a strain was pure.

The Irish potato famine of 1847 led to investigations on root crops, and Sutton produced the mangel, marrowfat pea, and a new variety of potato. He also experimented with grass and was able to improve pasturage.

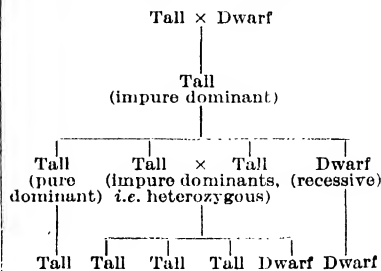
The industrial movements of the nineteenth century gave a great impetus to agriculture. Transport was facilitated, farm machinery invented, and many experiments on cereal cultivation were made in England, America, and Sweden.

One of the best-known breeders of new varieties of plants by hybridisation was Luther Burbank, a Californian nurseryman. Although familiar with Mendel's work (described below) he nevertheless worked largely by rule of thumb, and was able to obtain such novelties as stoneless prunes, white blackberries, thornless cacti, and 'plumcots' (the latter a hybrid between the plum and apricot). These new varieties, like many other cultivated plants, did not 'breed true' and therefore had to be propagated by vegetative means.

So far, as in animal B., all the results had been obtained by empirical methods, but in 1867, Mendel, abbot of Brün, working with the edible pea, made the

first *quantitative* systematic experiments on B., and as a result was able to formulate definite laws of heredity (see MENDEL). His work remained practically unknown until after Correns, Tschermak, and de Vries, all working independently, rediscovered these laws in the early twentieth century. Since that time extensive research has been done, both on plants and animals, in an attempt to discover whether Mendel's laws are universally applicable. Results show that, while in certain cases the laws enable the breeder to forecast his results with a high degree of accuracy, in other cases discrepancies occur, so that the best results can be obtained only by a combination of theory and practice.

Mendel's work showed that ovules of tall peas, cross fertilised with pollen from short ones, produce seeds which develop only into tall plants. He therefore described tallness as the *dominant* character. The actual presence of the factor for shortness in each of these plants was revealed by growth of the seeds obtained by self-fertilising the flowers. From the seeds, both tall and short peas developed, the tall plants being 3 times as numerous as the short ones. The short character was described as *recessive*. As a result of self-fertilisation, the short plants always produced seeds that developed into short plants, and for plants and animals it is an invariable rule that from stock with a true recessive character no corresponding dominant character can ever be bred. When the flowers of the tall plants were self-pollinated (for successive generations) one-third of them produced only tall ones, and hence were pure dominants with regard to tallness; the remaining two-thirds produced both tall and short plants and so were described as heterozygous (Gk. *heteros*, other; *zygon*, yoke) or impure dominants. These carried the factors or genes for both characters. Thus breeders who have studied their material know that as a result of the mating of 2 individuals with the same dominant character, offspring with a recessive character may be produced, but if this happen, both parents must have carried the factor for the recessive form; i.e. both were impure dominants.



Animals and plants occur, however, in which one character is not completely

dominant over its alternative. Blue Andalusian fowls bred together produce some black, some blue, and some 'splashed' white birds (i.e. white with black splashes). When the black and white fowls are crossed all their offspring are 'blue.' Thus the white character is not completely hidden by the black one, which is consequently described as an incomplete dominant. Corresponding results may be seen in the colours of sweet peas, and in the Jap. 'Four o'clock' (*Mirabilis*), where the crossing of plants with red and white flowers, respectively, results in the production of pink-flowered plants.

Breeders often try to obtain more than one character in their material. For instance, Biffen has succeeded in B. a strain of wheat which gives a good yield and is also immune to rust disease. In endeavouring to secure 2 or more characters selection becomes much more difficult and in some cases impossible. Mendel was able to obtain tall or short peas bearing seeds with green or yellow cotyledons, so that by careful selection he could get 4 different types of plants with genetic constitution pure for height of plant and colour of cotyledon. Experiments of more recent investigators, however, show that some characters are linked together. Examples of linkages were shown by Bateson in *Primula sinensis* and by Morgan in *Drosophila*. The offspring of a white-eyed female *Drosophila* with yellow body and a red-eyed grey male consist of equal numbers of red-eyed grey females and white-eyed yellow males. When these flies are bred together their daughters resemble their mothers and the sons their fathers, while about 2 per cent of the offspring have yellow bodies and red eyes or are grey with white eyes. In *Drosophila* therefore the gene for eye colour is linked with the genes for sex and for body colour, but in a few cases the linkage is broken and the particular eye colour enters into association with the body colour of the opposite sex. This separation and interchange of linked characters is described as crossing over, and the probability of its occurrence in material of known genetic constitution may be calculated mathematically.

Some of the very qualities that formerly retarded progress in plant B. have been those of greatest use in enabling the geneticist to determine the ultimate units of genetic constitution of his plants. The large number of seeds produced by a single plant will, given the same suitable environment, grow into plants with a number of differences due to the different associations of groups of unit characters. This may be seen by referring again to Mendel's hybrid peas obtained by crossing tall plants having green cotyledons with short plants having yellow cotyledons. The seeds of the self-fertilised hybrids developed into 4 different types of plant—tall plants with either green or yellow seed leaves and short plants with seed leaves of either colour. The sweet pea has 7 different groups of characters, and these may be associated in 128 ways,

without including any possible cross-overs. The higher animals usually have more than 7 groups, and since most animals used in B. have comparatively small numbers of offspring, it is obvious that the whole of the breeder's lifetime would be too short to discover the complete genetic constitution of an animal. Moreover, he probably will not be interested in trying to do so, but will confine his attentions to the characters which he is trying to secure.

For these reasons the theory of B. has advanced beyond its practice, but increasing application of it is being made in agriculture and in horticulture. Plant B. is now established on a scientific basis, and theory combined with knowledge gained by experimental work enables the plant-breeder to obtain many of his results with mathematical precision. Although theory cannot be applied to the B. of animals with the same certainty with which it may be applied in many cases to that of plants, it can help the dealer in his selection of material and in the elimination of certain error, particularly that involved in trying to breed animals for characters which are not ultimate units of genetic constitution. Thus when a breeder wishes to raise a 'hardy' stock or a progenist to secure an 'intelligent' race, the first consideration should be to determine, if possible, the characters which constitute 'hardiness' and 'intelligence.' The best results in B. will always be obtained by the intelligent application of theory to practice. See also BIOLOGY; HEREDITY; MENDEL. See W. Bateson, *Mendel's Principles of Heredity*, 1902; P. H. Morgan, *The Theory of the Gene*, 1928; C. D. Darlington, *Chromosomes and Plant Breeding*, 1932; C. H. Waddington, *An Introduction to Modern Genetics*, 1939; E. B. Ford, *Mendelism and Evolution*, 1940; J. R. Nichols, *Livestock Improvement in Relation to Heredity and Environment* 1945; and W. J. C. Lawrence, *Practical Plant Breeding*, 1946.

Breeze-fly, see under HOUSE-FLY.

Breezes, Land and Sea, are best studied in the tropics. For in hot climates they blow regularly, and extend a considerable distance, except when they are overpowered by more violent winds, as, for example, the monsoons. In England they are irregular. It is a matter of common observation that about noon a B. usually begins to blow landwards from the sea, and continues in that direction till sunset, whereas near midnight this B. is superseded by one blowing in exactly the contrary direction, that is, from the shore seawards. The following is the usually accepted explanation: The heat of the sun causes the air over the earth to expand, and therefore to rise. This upper stratum passes away towards the sea, and thus increases the barometric pressure. This causes a current of air to flow continually towards the coast, where the pressure is lower. When the land B. sets in at night, it is to be explained by similar reasoning. This time the atmosphere over the land is cooled, and the heated strata above contract and therefore fall.

The cooling takes place much more rapidly over the land than over the sea. Therefore the colder heavier air rushes out to sea to relieve the higher pressure.

Bregenz, tn. in Austria, situated on the site of an old Rom. camp, at the E. end of Lake Constance. It is the cap. of Vorarlberg, and is about 6 m. S.E. from Lindau by rail. The most important manuf. is that of wooden fittings for buildings, frameworks, etc. There are coal mines in the neighbourhood, and blast furnaces, also saltpetre works. B. trades in wine, fruit, corn, dairy produce, and cattle. During the invasion of Germany and Austria in the Second World War B. fell to the Fr. First Army in May 1945. Pop. 17,700.

Brehon Laws, the Eng. name for the laws that prevailed in Ireland till the middle of the seventeenth century. The correct name for the laws is the *Feinechus*, meaning the laws of the *Feine* or farmers. The appellation B. is derived from the Gaelic word *breitheamh* meaning a trained judge, who administered justice to the tribe. Fragments of transcripts of these laws are preserved in Trinity College, the Royal Irish Academy, the Brit. Museum, and the Bodleian. These fragments are a store-house of archaeological and philological treasures. The transcripts belong mainly to the fourteenth century, but the laws themselves go back as far as to the third century (the reign of Cormac Mac Art). The language of the B. L. is the *Bearla Feini*—the most archaic form of the Gaelic language. The vocabulary is often hard to interpret owing to the lack of contemporary documents. The B. expounded the law at the public assemblies of the tribes. If there were sev. Bs. in the dist. the suitor chose his own B. An appeal to the assembly was permitted against the decision of the B., and if he were found to have given a false decision he was liable to a severe penalty. The B. had to study the laws for a course lasting about 20 years before he expounded them. The society among which the B. L. prevailed was based on the clan. These clans were under provincial kings, but these provincial kings swore allegiance and paid tribute to the *Ard-Rig* or supreme king of Ireland. The land occupied by a clan was the collective property of the clan, but part of the land was reserved for the king, nobles, and other public servants. The remainder of the land was allotted on the tithe system to the people. The laws recognised 2 classes of crimes—crimes against the state and crimes against the individual. Crimes of the first class, e.g. treason, were punished with the severest penalties, i.e. banishment and loss of property. The offenders of the second class had to give compensation in proportion to the crime. The B. L. were the guardians of the entire social life of anc. Ireland.

Breisach, tn. of the Breisgau (q.v.) of Baden, Germany, situated on a hill, to the W. of the Rhine, about 13 m. W. of Freiburg. It was once an important Austrian fortress. The Fr. had possession of it sev. times, and during the Franco-

Ger. war of 1870 it was besieged. Pop. 3000.

Breisgau was a dist. in Germany between the Rhine and the Black Forest. It now forms a part of Baden. The land is fertile, and its productions are fruit, wine, corn, and flax. Timber is largely grown.

Breitenfeld, vil. in Saxony, about 5 m. N. from Leipzig. Two battles were fought here and gained by the Swedes in 1631 and 1642, during the Thirty Years war. It was also the scene of a part of the battle of Leipzig in 1813.

Breitinger, Johann Jakob (1701-76), Swiss scholar and writer, b. at Zürich. He became prof. of Gk. and Heb. in the univ. there. His critical works had a great reforming influence upon Ger. literature. In this effort he was associated with Bodmer, and took part in the controversy with Gottsched. His writings include *Kritische Dichtkunst*, a critique on the art of poetry, 1740, and an ed. of the *Septuagint*, 4 vols., 1731-32.

Breitkopf, Bernhardt Christoph (1695-1777), Ger. printer and publisher. In 1719 he founded the music-publishing firm, Breitkopf & Härtel at Leipzig. The firm became known by its great eds. of the complete works of the chief composers, and it has identified itself with musical progress on the Continent by its encouragement of new writers.

Breitkopf, Johann Gottlob Immanuel (1719-94), Ger. typographer, b. in Leipzig, and educated at the univ. there. He entered his father's printing and publishing business (to which he succeeded in 1745), and introduced many valuable typographical improvements, obtaining clearer and more elegant letters than had hitherto been known. He wrote sev. books on the art, and began a *History of the Art of Printing*. His second son, Christoph Gottlob B., after carrying on the business for a year, gave it up (1795) to his friend Härtel.

Breitscheid, Rudolf (1874-1945), Ger. politician and writer, b. Nov. 2, at Cologne; educated at Friedrich Wilhelm gymnasium, Cologne, and univs. of Munich and Marburg. From 1903 he was member of the Liberal Union; in 1908, however, with Th. Barth and H. von Gerlach, he founded the Democratic Union, of which he was president. He was editor of the weekly *Das Freie Volk*, 1910-12. In 1917 he attached himself to the independent Social Democrats, to whom he belonged until their reunion with the majority Socialists. From Nov. 1918 till Jan. 1919 he was Prussian minister of the interior. He was elected to the Reichstag in 1920. He pub. *The Bulwark and Liberalism*, 1908. On Hitler's rise to power he went into exile, and was in the Fr. unoccupied zone at the time of the Bordeaux armistice (1940), but on Feb. 11, 1941, he was handed over by the Vichy Gov. to the Gestapo and d. in Buchenwald concentration camp during an air raid.

Brema, Marie (1856-1925), operatic singer, b. at Liverpool of Ger.-Amer. parents, her real name being Minny Fehrmann and her married name Braun.

Studied under George Henschel and sang at concerts. Her first appearance in opera was in 1891, in the first London performance of *Cavalleria Rusticana*. In 1894 she made a successful appearance at Bayreuth. Afterwards sang in most of the prin. opera houses of the European caps. and at Covent Garden, her chief roles being Wagnerian, especially Brunhilde, and Kundry, and those of Orphée and Delilah. On retiring from opera she taught in the Manchester College of Music.

Bremen: 1. Land and former free state of N.W. Germany, traversed by the R. Weser. Area about 100 sq. m.; pop. 372,000. The chief occupation of the inhab. is agriculture. The language spoken is chiefly Low Ger. B. elected 1 member to the Reichstag. Under the Nazi regime, the state came under a Stadthalter, who was the personal representative of Hitler. At the end of the Second World War it was included in the U.S. zone of occupation. 2. City, cap. of the Land of B. Pop. 342,000. The city is divided by the riv. into 2 parts—the old tn. on the r. b. and the new tn. on the left. The old tn. is one of the most interesting relics of medieval days. The tn. has narrow winding streets and quaint irregular houses, possessing an anct. tn. hall, of which the wine cellar has been immortalised by Wilhelm Hauff. The cathedral of St. Peter, which replaced the wooden erection of Charlemagne, became one of the most famous cathedrals of antiquity. The ramparts of the tn. were converted into elaborate promenades. The modern commercial buildings were imposing. B. first rose to be a city of importance when Charlemagne made it the seat of a bishop. It soon became a city of first maritime importance in the days of Hanseatic prosperity. In 1810 it passed into the hands of the Fr., but regained its independence in 1813. In 1815 it was admitted into the Germanic confederation. It joined the N. Ger. Confederation in 1867, and finally became part of the new Ger. empire. Its trade suffered severely during the First World War, but after the war the city regained much of its former prosperity as an industrial and maritime centre in touch with the prin. markets of the world, conducting in particular an important trade with the U.S.A. in tobacco, cotton, and petroleum. Its harbour cleared some 10,000,000 tons of shipping annually, two-thirds of which was sea-going and one-third riv. traffic, and was capable of handling 6,000,000 tons of goods in exports and imports. During the Second World War the city was severely bombed, notably in Oct.—Dec. 1944, by the R.A.F. and U.S. Air Force. Although trade was at a standstill, the dockyards were active throughout the war, being the centre of construction of U-boats of the largest type, of which over 1200 were launched. As a result of the allied bombing, however, the work of the dockyards was restricted to the assembly of parts manufactured further inland. After the invasion of Germany Himmier took up his headquarters in B. on Apr. 18, 1945, to

organise the final resistance of the S.S., and the fifteenth Panzer Grenadier div. fell back on the city. By Apr. 23 the city was completely invested by the troops of the Brit. Second Army. By that time the city had been without gas for 10 days, and the main water supply was cut. Four days later the dockyards and most of the city came into Brit. hands. Resistance finally ceased on Apr. 28.

'Bremen, The,' name of a N. Ger. Lloyd liner, built in 1929. Quadruple screw, turbine-driven, and of a 51,731 gross tonnage. She is 898 ft. in length and 101 ft. in breadth, with a speed of 26 knots. In July 1929 the *B.* made the Atlantic crossing in 4 days 17 hrs. 42 min. from Europe to New York, thereby beating the record of the *Mauretania*. Shortly after the outbreak of the Second World War the ship endeavoured vainly to get back from America to Germany. She eventually found refuge in a Russian port. See further under ATLANTIC PASSAGE RECORDS.

Bremer, Fredrika (1801–65), Swedish novelist, b. at Tuorla near Åbo (Åbo, Aabo) in Finland. Her studies seriously affected her constitution, and at the age of 20 she travelled with her family, for the sake of her health. About this time she began to study the poetry of Schiller, and through its influence became possessed by the idea of a literary career. In 1828 the first vol. of *Sketches of Everyday Life* were pub., but the second vol., containing *The H. Family*, was the work that first brought her fame. Her father, a wealthy iron merchant, d. in 1830, and from that time she travelled and wrote as she pleased. She studied family life in the old and new worlds, and her books entitled *The Neighbours* (1837), *Homes of the New World* (1853) and *Life in the Old World* (1862) are the fruit of her researches. Her prin. works were trans. into Eng. by Mary Howitt. On her return to Sweden she became absorbed in questions of social reform, especially with the problem of the emancipation of women, and her later works are concerned with her views on those topics. They include *Hertha* (1856) and *Father and Daughter* (1858).

Bremerhaven, out-port of Bremen, Germany, situated on the r. b. of the R. Weser, at the mouth of the Geest, about 10 m. from the sea. It has splendid port accommodation, which consists of 4 large docks, and 6 dry docks. Its exports are corn, iron and steel, glass, woollen goods, linen, etc., and its imports are timber, machinery, etc. Pop. 25,000.

Bremersdorp, township in Swaziland, Africa. There is a motor omnibus service to Stegi, 43 m. The commissioner for Swaziland formerly resided here, but he now resides at Mbabane.

Brendan, or Brandan, St., of Clonfert, an Irish hero of legend, is reputed to have been b. at Tralee in Kerry in A.D. 484. The historical personage of this name seems to have been an abbot of the Benedictine order, but according to medieval legend this saint sailed across the Atlantic in search of a 'Promised

Land,' and was the hero of countless adventures. Geographers long accepted St. B.'s Is. as a geographical reality, and in the maps previous to Columbus's voyage it is located near the mythical is. of Antilla (or Antiglia). Columbus in his jour. says he had heard reports about the situation of the is. It was variously located by geographers until in 1759 the legend was exploded and the reported discoveries were explained as mirage. There are many versions of this voyage, perhaps the most popular legend of medieval times. The oldest version is the *Navigatio Brendani* of the eleventh century.

Brendon Hills, a range of limestone hills in W. Somersetshire, England, lying some 6 m. S. of Watchet. They average nearly 1400 ft. in height.

Brennan, Louis (1852-1932), Irish inventor, *b.* at Castlebar, co. Mayo. He resided in Melbourne, Australia, from 1861 till 1880. In 1882 his torpedo, controlled by wires unwound from the shore, was adopted by the Brit. Gov. for harbour defence; and B. was superintendent of the Gov. B. Torpedo Factory, 1887-96; consulting engineer of the same, 1896-1907. Made C.B., 1892. From 1896 to 1912 he made mono-rail experiments; in 1907 he gave a successful exhibition before the Royal Society.

Brenner Pass, lowest pass over the main Alps. It is in the Tyrol, and is on the main line from Germany to Italy. Its height is about 4500 ft., and it is 12 m. in length. It is open all the year round, and has been in use from anct. times. During the invasion of Europe in the Second World War, the U.S. Seventh Army reached the B. P. on May 4, 1945 and estab. a link with the Allied Fifth Army in Italy.

Brennus, used as the name, although probably the title, of 2 chieftains of the Celts of Gaul. The first B. led the Gaulish tribes in an attack upon Rome. In 391 B.C. he defeated and practically annihilated a large Rom. army. Had he then marched on Rome the city would have been at his mercy, but he wasted time, and the majority of the inhab. of Rome were able to seek safety in flight. The city, defended only by the aged senators, was easily captured, but the Capitol sustained a 6 months' siege, being once saved only by the geese of the Capitol. The Gauls at last consented to a ransom of 1000 pounds of gold. Whilst the gold was being weighed, the Roms. complained of some unfairness, and B. immediately threw his sword into the opposite scale, exclaiming, 'Vae Victis' (woe to the vanquished). Camillus is alleged to have appeared at this opportune time to avenge the many insults to the Roms., but the story is probably untrue. The Gauls seem to have returned in safety to their homes, leaving Rome plundered, sacked, and burnt, to recover her former strength. The second B. is supposed to have led 2 expeditions of the Gauls into Macedonia and Thrace. It is not certain that he took part in the first, but he was certainly the leader in the

second (279). He met with opposition at Thermopylae, but was able to defeat the Gks. by the employment of much the same tactics as had been used by the Persians some 2 centuries before. Thence the Gauls advanced on Delphi, but they were beaten back from that city by the determined resistance of the citizens. Rather than return defeated, and having already been wounded, B. killed himself.

Brenta, riv. in the N.E. of Italy. It rises in Lake Caldonazzo, in S. Tyrol. Its length is about 116 m., and its direction is first S., then eastward. It finally empties itself into the Adriatic Sea, at Brondolo. The old bed of the riv. was made into a canal, and is used more than the B.

Brentano, Clemens (1778-1842), Ger. poet and romance writer, *b.* at Ehrenbreitstein. He was the brother of Bettina von Arnim, Goethe's friend. He was of a restless, unsettled temperament, and subject to melancholia. He was a student for some time at Jena, but subsequently went to Heidelberg and afterwards to Berlin. In the year 1818 he became a zealous Catholic and renounced his former unsettled habits. For 6 years (1818-24) he lived in seclusion in the monastery of Dülmen, where the 'nun of Dülmen' revealed herself to him. After B. left the monastery, he lived at Regensburg, Frankfurt, and Munich, and still clung to the Catholic faith. Towards the end of his life his melancholia developed to a critical pitch. He *d.* at Aschaffenburg. B.'s poems are of a somewhat extravagant romantic type. Symbolism and occult expression are carried to excess. He pub. his *Säuren und Poetische Spiele* in 1800, and *Godwi* (a romance) in 1802. His dramatic works show considerable power; the best are *Victoria* (1817) and *Die Gründung Praags* (1815). His short novels were popular; *Geschichte vom braven Kaspar und dem schönen Annerl* (1817) is one of the finest things he ever wrote. His *Romanzen vom Rosenkranz* was pub. after his death and contains some of his best work. B. also collaborated with Ludwig von Arnim, his brother-in-law, in the collection of the tales and poems forming *Des Knaben Wunderhorn* (1800-8). His collected works were pub. in 1852.

Brentano, Ludwig Joseph (corrupted into *Lujo*) (1844-1931), Ger. political economist, *b.* at Aschaffenburg, in Bavaria. He belonged to the same family as the poet Clemens of the same name. He studied at Dublin Univ. and also at sev. Ger. univs. In 1868 he travelled in England to study the conditions of labour and examine Eng. trade unionism. The fruit of these researches was his prin. work, *Die Arbeitergilden der Gegenwart*, 1872. The work traces the evolution of the trade union from the guilds of the Middle Ages. He became a prof. of political economy at Breslau in 1872, at Strasburg in 1882, at Vienna in 1888, at Leipzig in 1889, and at Munich in 1891. His other works include treatises on wages, on insurance for working classes, and on socialism. His later books are:

Ist das 'System Brentano' zusammengebrochen?, 1915; *Die Urheber des Weltkriegs*, 1922; *Der wirtschaftende Mensch in der Geschichte*, 1923; *Eine Geschichte der wirtschaftlichen Entwicklung Englands*, 1927-29. D. in Munich.

Brentford, co. tn. of Middlesex, England, about 8 m. W. from London and almost opposite Kew. The R. Brent divides the tn. and the Grand Junction Canal joins the riv., giving the tn. considerable water communication. B. has docks and waterworks, which supply W. London, breweries, distilleries, soap factories, and saw and planing mills. There are large and profitable market gardens, and a weekly market. Pop. (with Chiswick) 63,000.

Brentford, Sir William Joynson-Hicks, first Viscount, of Newick, Sussex (1865-1932), Eng. politician and lawyer; eldest son of Henry Hicks, of Plaistow Hall, Kent. In 1895 he assumed additional surname of Joynson, on marrying a daughter of the late Richard Hampson Joynson. His compound name was popularly shortened into 'Jix.' After having sought a seat (Woolwich) on the L.C.C., he contested N. Manchester, for Parliament, as a Unionist, in 1900; N.W. Manchester in 1906. In 1908 he was elected for N.W. Manchester, defeating Winston Churchill. He was defeated there early in 1910, but elected next year for Brentford. In 1918 he changed to Twickenham, which he represented until the dissolution of 1929. He was made a baronet, Sept. 1919; and was one of those Conservatives who disapproved of continuing the Coalition. Under Bonar Law in 1922 he became parl. secretary to the overseas trade department; in 1923 postmaster-general and paymaster-general; and then financial secretary to the Treasury, with a seat in the Cabinet—being sworn of the Privy Council Mar. 27, 1923. Under Baldwin he was minister of health until Jan. 1924; and in the second Baldwin ministry, 1924-29, home secretary. He became Viscount B. at the dissolution 1929. He was president of the National Church League, and was prominent in securing the defeat of the Alternative Prayer Book measure in 1928. He wrote books on motoring law, censorship of morals, and the prayer book.

Brent Goose (*Bernicla brenta*), bird of the family Anatidae, closely related to the barnacle goose. In colour it is black, white, and grey, and it commonly frequents Brit. coasts. It is both carnivorous and herbivorous, and is an edible species of goose.

Brenthidae, family of coleopterous insects which includes many tropical beetles; the chief genus is *Brenthus*. The most common colouring of the species is black, or brown, with red spots and markings. They live on plants, and the females bore into wood with their sharp mandibles.

Brenton, Sir Jahleel (1770-1844), Brit. adm., b. in Rhode Is. Belonged to a loyalist family which lost most of its property in the insurrection of the Amer. colonies. He was lt. in the Brit. Navy at

beginning of the war, and emigrated to England with his family. He went to sea (1781) with his father, and to the Chelsea 'maritime school' on the return of peace. For a time B. served in the Swedish Navy against the Russians. He was at Cape St. Vincent, in the *Barfleur*, 1797. In 1801, served as flag-captain to Saumarez in actions at Algieras and Gibraltar. B. was wrecked off Cherbourg, 1803, and joined by his wife in prison. Exchanged (1806) for Masséna's nephew captured at Trafalgar. His most brilliant achievement was his defeat of the Franco-Neapolitan flotilla, 1810. He was made baronet, 1812; K.C.B., 1815. B. reached flag rank 1830, and took part in philanthropic work. He was resident commissioner at the Cape, and lt.-governor of Greenwich Hospital, 1840. See Raikes's life, 1846.

Brentwood, mkt. tn. in Essex, England, situated in pleasant, well-wooded country, about 9 m. from Chelmsford. There is a large and important grammar school, which was founded by Sir Anthony Browne, and dedicated to St. Thomas à Becket. Pop. 7500.

Brenz, Johann (1499-1570), Lutheran reformer, b. at Weil, Württemberg. He was a student at Heidelberg and there heard Luther speak. Thenceforth he became a staunch adherent of the Reformation party. In his *Syngramma Suevicum* he expounded Luther's doctrine of the eucharist. Although he was a zealous reformer, he opposed persecutions and openly expressed his disapproval of methods of persecution in his work *De Hæreticis, an sint persequendi*, 1554. He co-operated in the Württemberg Confession of Faith, and his catechism was second only to Luther's.

Bréquigny, Louis de (1718-95), Fr. historian, b. at Granville. Made a special study of Islamism and the teaching of Mahomet. His work in this field went far to dispose of popular misconceptions on the Mohammedan faith. He wrote many works on Fr. national hist., generally in collaboration with other historians: *Lois et ordonnances des rois de la troisième race*; *Diplomata, chartæ, epistolæ et alia monumenta ad res francicas spectantia*—a glossary of old Fr. words and phrases; and the concluding part of Amiot's *Les Mémoires sur les Chinois*.

Brereton, Austin (1862-1922), Eng. dramatic critic. At an early age was critic for the *Stage*, and afterwards produced his own paper, *Dramatic Notes*. He was the official biographer of Sir Henry Irving, to whom he was secretary and he also wrote a biography of H. B. Irving.

Brescia, prov. of N. Italy. It is bordered by Bergamo on the N.W., by Tyrol on the N.E., on the S.W. by Cremona, and on the S.E. by Mantua. It has an area estimated at 1645 sq. m. and a pop. of 710,000. In the N. it is mountainous, but the rest of the prov. forms a part of the fertile plain of Lombardy, in which are grown the vine and olive, corn, flax, and hemp. There are also miles of orchards. B., the cap. of the prov., is

beautifully situated on the banks of the R. Mella and Garza, at the foot of sev. hills. It is a well and regularly built tn., surrounded by walls, and possessing 2 cathedrals. In the Second World War the damage done was considerable and many monumental buildings were destroyed. The seventeenth-century cathedral sustained only slight damage; but the anct. church of S. Afra, which was rebuilt in 1580 and contained paintings by Titian, Tintoretto, and Veronese, was almost entirely destroyed. The thirteenth-century church of S. Francesco, with its much modernised Gothic façade, was severely hit; and the small early Renaissance church of S. Maria del Miracoli (1458-1523), with 4 domes, was very badly damaged, the roof and virtually everything else, excepting the structural framework and the sacristy, being destroyed. The great Palazzo Salvadego had little more than its façade left and various other palaces were also severely damaged. Its manufs. are important, and consist of raw silk, woollen goods, leather, wine, etc. It became famous for its fire-arms and cutlery. There are tan-yards, paper and oil mills, and large iron works. The antiquity of the city, however, is its chief source of interest. Its fine Rom. remains, the marble temple of Vespasian, the Corinthian columns, statues, etc., are visited each year by numbers of people. Throughout the city are many old lt. pictures and frescoes. There are a botanic garden, museum, public library, hospital, etc., and a great number of public fountains in streets and squares. Pop. 128,000.

Breshko - Breshkovskaya, Ekaterina (1844-1934), the *babushka* i.e. grandmother, of the Russian Revolution. *B.* in Vitebsk, daughter of a Russian of aristocratic Polish descent and well educated. Joined a revolutionary group at Kiev, but, being betrayed, was tried and sent to the Siberian mines (1873). She was not released until 1896, and then went to America to collect funds; but was again betrayed and sent into exile, only returning during the revolution, though she had always energetically worked for the movement even at a distance. But strictly she was a Menshevik and, on the establishment of the Bolshevik regime she went to Prague, where she spent the rest of her days.

'Breslau', see 'GOEBEN' AND 'BRESLAU.'

Bressanone (formerly Brixen), tn. of N. Italy, 56 m. S.E. of Munich. Its cathedral, monasteries, and palaces are the feature of the old tn., which, being beautifully situated, is a favourite health resort. The bishopric of Brixen from 1179 to 1803 was one of the states of the Ger. empire. Pop. 7000.

Bressay, Is., 6 m. long and 2½ m. wide, belonging to the Shetlands, situated E. of mainland. Its coast is bold and rocky, and is the home of numerous eagles. Peat moss largely covers the interior of the is. The inhab. are engaged in slate quarrying, fishing, and making kelp. Pop. 600.

Bresse, former dist. of France, being part of the kingdom of Burgundy. It

was situated to the E. of the R. Saône, and its cap. was Bourg.

Bressuire, tn., cap. of an arron. in the dept. of Deux-Sèvres, France. Has important markets. Pop. 5000.

Brest, fortified seaport in the dept. of Finistère, France. It has a magnificent harbour, bounded by the promontory of Finistère on the N. side and Kelerun on the S. The city, as it existed before the Second World War, was built on the slopes of 2 hills, intersecting which is the R. Penfeld; the incline is very steep, and the terraces of the tn. were exceptionally prominent. On the l. b. of the riv. was B. proper; on the right was the suburb known as Recouvrance. There was an imposing promenade called, after the constructor, the Cours d'Ajot, beautifully planted out and embellished with statues of Neptune and Abundance. On the right of the estuary of the Penfeld stood a castle of the twelfth century—the only medieval relic in the tn. The sinister ramparts, built by Vauban, are of a much later date. Among the more noteworthy modern buildings were an exchange, observatory, public library, naval hospital, and some fine churches. The estuary of the Penfeld forms the port of the tn. On both banks were shipbuilding yards, docks, gun-foundries, and marine stores. The port of commerce was divided off by the Cours d'Ajot, and is protected by a breakwater nearly a m. in length. The manufs. of the city included candles, leather, chemicals, paper. The chief exports were wheat and fruit. The roadstead is about 6 m. in length. The tn. of B. was an object of dispute between the Fr. and Eng. In 1342 it passed into the hands of the Eng., and was held by them till 1397. It was again taken by the Eng., but finally fell to the Fr. through the marriage of Louis XII. to Anne of Brittany. It was Richelieu who realised its possibilities as a fortress, and commenced the fortifications in 1631. Pop. 80,000.

The docks were frequently bombed by Brit. and Amer. aircraft during the Second World War, in the hope of destroying the Ger. U-boat base there. Many raids were made on the Ger. battleships *Scharnhorst*, *Gneisenau*, and *Prinz Eugen*, all of which eventually escaped to Germany. In the 6 weeks' siege in Aug.-Sept., 1944, the city of B., primarily through the ruthlessness of the Gers., became almost a total ruin. The broken remains of Place President Wilson, where the Amer. Gen. Middleton formally handed over to the Fr. authorities after the capitulation of the Ger. commander, Ramcke, was practically all that was left of B. From the shattered cathedral of St. Martin to the riv. a m. away not a single building escaped destruction. Flames and shell-fire converted the city into a desolation past all hope of repair. The chief shopping and commercial thoroughfares, like the rue Siam, were simply canyons through which jeeps lurched with difficulty through craters and over piles of fallen masonry. Vauban's wall, which proved a formidable

obstacle to the besiegers, compelling them to use scaling ladders in the manner of fourteenth-century warfare, was about the only thing left moderately intact. The Place Liberté was identifiable only with the aid of a map. It was merely a wilderness of lacerated earth bordered by blackened ruins. There was no trace of the war memorial which had stood in the Place du Porte, nor more than the ruins of the great post office building in the background of that square. But although B. was a ruin the famous Ger. U-boat pens were relatively little damaged, in spite of the allied bombing. This submarine fortress was a staggering work cut into the solid rock. From the main tunnels 400 rooms opened. The officers' quarters were furnished with considerable luxury, having papered walls and carpeted floors. The pens, each 375 ft. long and 42 ft. wide, and all closed from the harbour by thick steel gates, could accommodate a full flotilla of 12 large ocean-going submarines at the same time. The pens themselves had reinforced concrete roofs 12 ft. thick. Yet three of the Brit. bombs had crashed through them, while others had wrecked installations in the immediate vicinity. The pens were entered from the land side by steel swing doors 15 ft. high and about the same width, and more than a ft. thick. Through the doorway ran a railway track and a wide roadway. Over all the pens were travelling gantries with electric power. At the ends of the pens were enormous workshops—battery, electrical, and torpedo shops—besides forges and a foundry. On the hill above the pens was the great granite building of the Ecole Navale, which was the Ger. naval headquarters. It was badly knocked about, but the stout granite had stood up well. Beside the Ecole Navale was a large hospital built entirely of concrete with walls 8 ft. thick.

Brest-Litovsk, or Brzesc nad Bugiem, tn. of Brest Region, Byelorussia; formerly in the Grodno prov. of Poland. It is situated at the confluence of the R. Bug and the Mukhovetz. It was once the home of the Polish kings, and has an Armenian bishopric. It contains a Catholic church, 3 Gk. churches, and a synagogue for the Jews. There are military stores and magazines and a fortress. Its manufs. are leather, cloth, soap, etc., and the chief articles of trade are wood, birch tar, flax and hemp, grains, etc. B.-L. was a great stronghold in the Russo-Ger. campaigns of the Second World War. It was captured by the Gers. on June 23, 1941, and retaken by the Russians on July 29, 1944, during Marshal Zhukov's offensive in White Russia. See EASTERN FRONT, or RUSSO-GERMAN CAMPAIGNS, IN SECOND WORLD WAR. Pop. 56,000

Brest-Litovsk, Treaty of, treaty which ended the war between Germany and Russia in 1918. In Nov. 1917 the Bolshevik revolution broke out, resulting in the formation of the Soviet Gov. with Lenin in control. An armistice was concluded with Germany early in Dec., and peace negotiations were begun at the headquarters of Prince Leopold of Bavaria

at B.-L. The treaty was signed on Mar. 3, 1918. The chief terms of this treaty were: (1) All mutual agitation and propaganda to cease; (2) Soviet Russia agreed to renounce control of certain ter. which formerly belonged to Old Russia; (3) Germany to evacuate certain parts of Russia then occupied; (4) Russia to evacuate the E. Anatolian provs. of Turkey; the dists. of Kars, Ardahan, and Batum, and Estonia, Livonia, Finland, and the Aaland Is.; (5) Russia to demobilise her army completely and keep all warships within her harbours; (6) Russia to recognise the treaty of peace concluded by the Central Powers and Ukrainian People's Republic; (7) Persia and Afghanistan to be respected as free and independent states; (8) Mutual renunciation of payment of war costs. Article XII. of the treaty provided for the conclusion of other treaties, e.g. a supplementary treaty signed at B.-L. on Mar. 3, 1918, which dealt with the establishment of public and private legal relationships between Germany and Russia, the exchange of prisoners of war and interned civilians, and the treatment of merchant shipping. A commercial treaty between Germany and Russia was also concluded, Article X. of which shows Germany's effort to lessen the effect of the blockade, for it reads: 'There shall be reciprocal freedom from all transit dues for goods of all kinds conveyed through the ter. of either of the contracting parties, whether conveyed direct or unloaded, stored, and reloaded during transit.' One important treaty was the 'Ger.-Russian Financial Agreement,' under which Russia agreed to pay to Germany, under Article II., 6 milliards of marks as compensation to Gers. 'who shall have suffered damage by reason of Russian measures.' This was signed by the peace delegates of both parties on Aug. 27, 1918.

The military situation created by the conclusion of the treaty of B.-L. did not prove so favourable to Germany as she had calculated. The Russian frontier could not be left unguarded, as it was fully expected that independent hordes of Russians would make serious raids across the border in spite of the terms of the treaty. A Ger. force had also to be kept in Finland as a threat to Petrograd (now Leningrad) should Russia fall under the influence of the Entente and be induced to resume operations against Germany. The Rumanian army had been demobilised, but it had not been disarmed, and the Gers. found that at least 4 divs. were required in that part of Europe. The situation was also aggravated by the fact that since the abdication of the Emperor Charles, no reliance was to be placed upon the Austro-Hungarian troops. It was, however, too late for Germany to alter her plans for a supreme effort on the W. front, before the Entente forces were reinforced by the Amers. The protracted peace negotiations at B.-L. caused Germany to lose valuable time, and thus nullified the effect on the operations of the troops she was able to transfer to the W. front as a result of the

conclusion of the treaty. This treaty was recalled, ironically enough, in Sept. 1939, after the Ger. invasion of Poland, when the Soviet armies marched into that country and Stalin's representatives met those of Hitler, at B.-L., to partition Poland between them. This coup of Stalin's effectually ended Hitler's dreams of further conquest eastward.

Bretagne, see BRITANNY.

Brethren, Church of the, the name of the most numerous section of certain religious communities in the U.S.A., which derive from the Ger. Baptist B. founded about 200 years ago in Germany. The Ger. B., called Dunkers, originated in Schwarzenau in about 1708, but about 11 years later emigrants from this community estab. themselves at Germantown, Pennsylvania. The C. of the B. number over 130,000 members, organised in more than 1000 churches. The Church maintains missions in Asia and Africa, and has 8 colleges, 1 academy, and a training school, the latter with nearly 5000 students. The name of its official organ is *The Gospel Messenger*, and the General Missionary Board of the Church has its own periodical, the *Missionary Visitor*.

Brethren, Plymouth, see PLYMOUTH BRETHREN.

Brethren of Common Life, community formed during the Middle Ages, and often wrongly described as 'Reformers before the Reformation.' They can be said to have been estab. by Gerard Groot about the year 1380, and included at one time in their numbers the famous Thomas à Kempis. They included in their numbers many laymen. The B. were free to remain as long as they liked, or to depart when they liked. They were to remain firm, as long as they remained B., to their vows of chastity, poverty, and obedience. Their money was to go to a common fund, and they were to spend their lives amongst the people, converting and teaching them. They were bitterly attacked from inside the Church, but were triumphant over their enemies at the council of Constance. During the sixteenth century they began to decline, and they became extinct in the seventeenth. They are sometimes called the B. of Modern Devotion.

Brethren of the Free Spirit, a sect of mystical pantheists who sprang into existence during the thirteenth century. They were really the outcome of the revival of the Aristotelian movement influenced by Neo-Platonism. They were bitterly attacked by the orthodox. Council after council condemned their works, and yet they continued to exist until the sixteenth century. They probably survived in some of the Protestant mystic sects that sprang into existence at that time.

Brethren of Mercy, see MISERICORDIA.

Bretigny, vil. in the dept. of Eure-et-Loir, France, 6 m. S.E. by rail from Chartres, and about 20 m. S. of Paris. It is noted as being the scene of a treaty drawn up in 1360, between England and France, by which the former power renounced all claim to the crown of France

and liberated the king, John II. France ceded to England a quarter of the kingdom of France, equivalent to 17 depts., and paid a ransom of 3,000,000 crowns for their monarch.

Breton Island, Cape, see CAPE BRETON ISLAND.

Breton, Jules Adolphe (1827-1906), Fr. painter, b. at Courrières, Pas-de-Calais, France. He studied art under de Vigne at Ghent, under Wappers at Antwerp, and under Drölling at Paris. His first pictures were historical in character, and include 'Saint Plat Preaching in Gaul' and 'Misery and Despair'—a scene of the revolution of 1848. B., however, saw that his talent lay in interpreting rural life. In 1853 he exhibited his 'Return of the Harvesters' in the Salon at Paris, and the 'Little Gleaner' at Brussels.

Breton, Nicholas (c. 1545-1626), Eng. poet and pamphleteer, native of Staffordshire, stepson of George Gascoigne. Studied at Oxford, and wrote pastorals, sonnets, and madrigals. His *Pastoral Shepherd* appeared 1604. *England's Helicon*, 1600, contains lyrics by him. He pub. numerous books of prose and verse, including *A Mad World, my Masters*, a prose dialogue (1603). See *Collected Works* (ed. by Dr. Grosart, 1879 and 1893).

Bretón de los Herreros, Manuel (1796-1873), Sp. dramatist, b. at Quel, in the prov. of Logroño. He occupied sev. gov. offices, but lost them owing to his strong Liberal tendencies. He wrote about 160 original plays, and many translations. His genius lay chiefly in comic power. *Muñeca; y verás*, 1837, and *La Escuela del Matrimonio*, 1852, are classics.

Breton Language and Literature. The B. language is the language of Lower Brittany. A Celtic language, allied to the Cornish and Welsh, it is one of the Indo-European group. The B. dialect is not a *patois*, since its idiom is exceedingly exact and precise, and the mechanism of its grammar is subject to strict laws based upon the phonetic methods of the Indo-European languages; in Sanskrit alone is this exemplified in a higher degree. Among the many dialects into which the original B. has, like all oral languages, become subdivided, 4 stand out, those, viz., of Léon, Cornouailles, Trégor, and Vannes. The Léonard is the one which remains nearest to the original, and the Celts of Brittany look upon it as their classical dialect. B. is the language spoken by the Britons who fled to Armorica or Brittany in the fifth and sixth centuries. It is still spoken by the 'Bretons bretonnants'—the Bretons of Lower Brittany. Up to the eleventh century there existed no monument of B. literature. A few MSS. containing glosses, which have been collected in 1 vol. by J. Loth (*Vocabulaire Vieux-Breton*), were all this period produced. From the eleventh century to modern times there are the *Chartes of Quimperlé*, and many mystery plays, such as *Le Mystère de Sainte-Noun* and *Le Grand Mystère de Jésus*. In the nineteenth century Legonidec, Brizeux, Luzel, Proux,

le Braz, de la Villemarqué, and other pioneers brought about a literary renaissance. Dramas, lyrics, haglogies, dictionaries, and vocabularies were produced in great number, and were received with enthusiasm. The Bretons were reminded again, as they had been reminded in the seventeenth century by Julien Maunoir, that they were a nation. One of the most representative works of the modern movement is *An Delen Dir* ('The Harp of Steel'), by Fanch Jaffrennou. But the B. genius is best expressed in the oral literature of the anct. bards and story-tellers. Gwesnon, Taliez or Taleisin, Mezzin, or Merlin, and Sullo can still be recognised in the popular traditions, which are saturated with the marvellous, the supernatural, the ideal, with stories of adventure and of the sea.

Bretschneider, Heinrich Gottfried von (1739-1810), Ger. satirist, b. at Gera. He attended the Moravian Institute at Ellersdorf and the gymnasium at Gera. In 1778 he obtained the office of librarian at the univ. of Buda, and in 1782 a gov. appointment. His best satires are *Almanach der Heiligen Auf*, 1788, and *Walters Leben und Sitten*, 1793.

Bretschneider, Karl Gottlieb (1776-1848), Ger. theologian, b. at Gersdorf in Saxony. He studied theology at Leipzig, and the penetration of his intellect attracted the attention of F. V. Reinhard, preacher to the court at Dresden, through whose influence he became pastor at Schneberg in 1807. He was appointed general superintendent at Gotha in 1816. B. showed decided rationalistic tendencies. His theological works are numerous.

Brett, Reginald Baliol, and William Baliol, see **ESHER, VISCOUNTS**.

Bretten, tn. in Württemberg-Baden, Germany, situated on the R. Seelbach, about 15 m. from Karlsruhe. Melancthon, the reformer, was b. there on Feb. 16, 1497. The Elector Palatine Frederick II. originally had jurisdiction over the tn. Pop. 6000.

Bretton Woods Agreements, formulation of international monetary policy as agreed by the representatives of 44 nations at the international conference at B. W., New Hampshire, U.S.A., July 1-22, 1944, and subsequently ratified by most of the nations concerned. The object of the conference was to consider means of international monetary co-operation in order to aid international trade and to ensure stability of rates of exchange. The conference was agreed that international co-operation was essential to the maintenance of an international monetary system in order to promote trade, and that no nation should change its monetary policy without international consultation, and, further, that the nations should co-operate to increase foreign investment to enable the work of reconstruction to be carried out after the war. These aims were embodied in the B. W. Final Act (July 22, 1944), by which the conference recommended that a permanent international monetary fund should be set up with a capital of 8,800,000,000 dols., and also an interna-

tional bank for reconstruction and development with a capital of 9,100,000,000 dols.

Bretts and Scots, Laws of (the Lat. *Leges inter Brettos et Scotos*), name applied to the laws relating to the Celtic tribes of Scotland in the thirteenth century. The Scots were Celtic tribes in the highland dists., and the Bretts were the remnant of the Britons occupying the dist. of Strathclyde, or Cumbria. The dist. of Cumbria was held by the heir to the Scots throne, who was known as the Prince of Cumbria. The B. and S. were conservative in their Celtic traditions and institutions, but in 1305 Edward I. of England ordained 'that the usages of the Scots and Bretts be abolished, and no more be used.' The fragments of the laws which remain are similar to the Brehon laws of the Irish. The system was an elaborate 'valuation' scheme, fixing the prices or 'cows' at which every man and woman was valued, from the king to the vellein or churl. The basis of valuation was a cow—the king was valued at 1000 cows and a churl at 16. Hence was arranged a system of compensation for various injuries and crimes.

Bretwalda (O.E. 'ruler of the Bretts'), title given in the O.E. Chronicle to King Egbert, and (retrospectively) to seven earlier old Eng. kings, and sometimes assumed by later ones. Its meaning is 'ruler of Britain' and the term is to be found in a charter of Athelstan, 934, in which, however, he is styled 'Brytewalda' of all the is., which variant would, etymologically, mean 'wide ruler'; whereas in the few places where it occurs it is used, rightly or wrongly, to mean 'lord of Britain.' Some time before the final predominance of Wessex a loose supremacy on the part of one kingdom over the whole or part of the rest was formally acknowledged and the chief so recognised was known as a B. or ruler of Britain. Edwin or Eadwine, king of Northumbria, was the first real B., although his father, Ella, first laid claim to the title. Ethelbert held the office of B. or 'overlord' of Britain to the Humber.

Breul, Karl Hermann (1860-1932), Ger. philologist and educationist, b. in Hanover, Aug. 10, and educated at Goethe Gymnasium, where he first studied theology, but then took up modern languages at Tübingen, where he studied under Ten Brink and Boehmer. Settled in England in 1884, and was appointed first univ. lecturer in Ger. by Cambridge Univ., which had just estab. the medieval and modern languages tripos. In 1902 he was appointed a prof. of Ger. by London Univ., but did not take up the appointment. In 1910 he was elected to the recently founded Schröder professorship of Ger. at Cambridge Univ. Had a strong influence on education in his adopted country. President of Modern Languages Association, 1910, and of the Eng. Goethe Society (founded 1886), and one of the founders and first editor of the *Modern Language Quarterly* (1897). Made numerous contributions to the literature

on the teaching of modern languages: *The Teaching of Modern Languages in our Secondary Schools*, 1898, repub. as *The Teaching of Modern Foreign Languages and Training of Teachers*; *Handy Bibliographical Guide to the Study of the German Language and Literature*; also produced well-annotated eds. of Ger. classics and an ed. of *Weir's German Dictionary*. Ed. Eng. and Fr. texts, including a fine ed. of the *Cambridge Songs*—a notable contribution to the study of medieval literature. D. Apr. 13.

Breunnerite, mineral consisting of magnesium carbonate, $MgCO_3$, together with oxide of iron. It is a variety of magnesite, and is rarely found in the crystalline form.

Breve, note in music. It has now the greatest time value, being equal to 2 semibreves. It is written thus \square or $\parallel O \parallel$, but is rarely found outside church music.

Breve, term in auct. Scots law, denoting a writ issued by Chancery ordering a judge to try by jury questions relating to: (1) Inquest (to ascertain heirs); (2) Tutory (appointment of guardians); (3) Idiocy (appointment of guardians for the insane); (4) Terce (recovery of a widow's dower); (5) Div. among heirs—portioners.

Brevet, mt. of the Pennine Alps, Savoy, rising above the valley of Chamounix. Its summit (altitude 8283 ft.) commands a fine prospect of Mont Blanc.

Breves, tn. in the state of Pará, Brazil, situated in the S. of the is. of Marajo. Pop. 13,000.

Brevet, a word used to denote commission given to officers of the Brit. Army, of or above the rank of captain, to a higher rank without regard to the number of vacancies there may be in the higher order. A general B. formerly occurred at intervals of 5 years, but it gradually became confined to occasions of public thanksgiving, e.g. coronations and satisfactory conclusions of military service. The system was found to be vicious, because the rate of promotion was not adjusted according to demand. In 1854 general Bs. were abolished, and a system of individual Bs. was organised for distinguished military service. Bs. are not given in the Navy. In the U.S.A. the system applies to first lieutenants and officers above that rank, but the commission does not entitle the holder to a higher rate of pay.

Breviarium Alaricianum, collection of Rom. law, compiled by the command of Alaric II., king of the Visigoths, in the year A.D. 506. In it are contained 16 books of the Theodosian code, the *Novels* of Theodosius II., Valentinian III., Marcian, Majorianus, and Severus; the *Institutes* of Gaius, 5 books of the *Sententiae Receptae* by Julius Paulus; 13 titles of Gregorian code, 2 titles of Hermogenian code, and a part of the first book of the *Responsa Papiniani*. By many people it is thought that Anianus was the composer of this code, and hence it is often called the 'Breviary of Anianus,' but by the Visigoths it was known as *Lex Romana*. It was only in the sixteenth

century that it received the name of B., to distinguish it from a later ed. that was introduced in the ninth century for the benefit of the Romans in N. Italy. This B. A. is the only collection of Rom. law containing the first 5 books of the Theodosian code and the 5 books of the *Sententiae Receptae* which has been preserved, and at one time was the only work known, until the discovery of some MSS. in a library in Verona.

Breviary (Lat. *breviarium*), book which contains the offices for the canonical hrs. in the Rom. Catholic Church. Though breviary means a summary it was probably used because it was a compilation of the various books (psalms, prayers, etc.) needed in any one service. There are 8 canonical hrs. First comes the Matins, which really belong to midnight, but are said in Italy about 7.30 a.m. On Sundays this service is divided into 3 Watches of the Night. Lauds, or Morning Praises, should be said at sunrise. The other services, or Little Day Hours, are Prime (6 a.m.), Terce (9 a.m.), Sext (noon), and None (3 p.m.), named after the hr. in the day at which they occur, 6 o'clock being the first hr. All these consist of a hymn, portions of the Psalms, and prayer. The seventh service, Vespers, is proper to sunset, whilst Completorium, or Compline, should be said at 9 p.m., as it is an appeal for protection during the night. The celebration of a great many saints' days adds much to the monotony of the Little Hours, as it means that whilst 50 psalms are continually recurring the rest are rarely sung at all. Only in monasteries or other religious associations can men fulfil all the offices of the B. at the appointed hr. It is usual, therefore, in all cathedrals to mass the services together, and to celebrate Matins and Lauds at 8 a.m., the Little Hours at 10 a.m., and Evensong and Compline at 4 p.m. The Rom. B. has undergone sev. revisions. In 1536, a Spaniard, Francis, cardinal of Quibones, made sweeping reforms in the B., by which he ensured that all the Psalms were read each week, and the major portion of the Bible each year. Although Rome refused to accept his revision, it is of exceptional interest to Englishmen, as the prefaces of the Eng. prayer book are largely modelled on those of the cardinal, and the daily services of the Eng. Church are little more than condensations of the offices he enjoined. Till the council of Trent every bishop had power to regulate the B. of his own diocese. Pope Pius V., however, while sanctioning those which could prove at least 200 years of existence, made the Rom. obligatory in all other places. Except for the Mozarabic B. in use at Toledo, and the Ambrosian that is followed in Milan, the Rom. has effectually suppressed all others among the secular clergy, but monastic Bs. still exist (e.g. for Benedictines and Dominicans). Since Pius V. the Rom. B. has been revised sev. times for the purpose of simplifying the rubrics, improving the scriptural text, correcting the prosody of the hymns,

and bringing the biographies of the saints into consonance with the results of historical research.

Brewer, Sir Alfred Herbert (1865-1927), Eng. organist and conductor. Studied at the Royal College of Music. Organist at St. Catherine's, Gloucester, his native city, and later at Gloucester cathedral. Composed many cantatas, organ pieces, and minor orchestral works.

Brewer, David Josiah (1837-1910), Amer. jurist, b. in Smyrna, son of a missionary of that place. Became a judge of the supreme court of the U.S.A. in 1889. He was president of the Venezuela Boundary Commission in 1896, and was a member of the Brit.-Venezuelan court of Arbitration at Paris in 1899. One of his most important decisions was at the time of the Chicago strike of 1884, when he estab. the right of the federal court to restrain obstructions to trains engaged in inter-state commerce or the transmission of mails.

Brewer, Ebenezer Cobham (1810-97), author of the *Dictionary of Phrase and Fable*, b. in Russell Square, London, May 2, 1810. Educated at Trinity Hall, Cambridge; ordained priest 1836; LL.D. 1840. Resided in Paris 1852-58. Afterwards lived in London and then at Lavant (Goodwood). Prin. works: *A Guide to Scientific Knowledge*, 1850; *A Guide to Scripture History*, 1860; *A Guide to Every-day Knowledge*, 1864; then the *Dictionary*, 1st ed., 1870; *The Reader's Handbook of Allusions, References, Plots, and Stories*, 1880; *Historic Note-Book*, 1890. D. at Edwinstowe vicarage, Newark, Mar. 6, 1897.

Brewer, John Sherren (1810-79), Eng. historian, b. at Norwich. He was the son of a Baptist schoolmaster. In 1833 he graduated with honours in classics at Queen's College, Oxford. He was appointed to the chair of Eng. in King's College, London, in 1841. He did much valuable research work. He pub. and ed. the *Monumenta Franciscana*, 1858; Bacon's *Opus Tertium* and *Opus Minus*, 1859; and a portion of the works of Giraldus Cambrensis, 1861. Through the influence of Disraeli, he secured the Crown living of Toppesfield, Essex, where he had leisure to continue his scholarly commentary on the records of the reign of Henry VIII.

Brewing, preparation of an alcoholic beverage from a farinaceous grain by means of fermentation. Rice, maize, and millet seeds are used in various parts of the world for this purpose, but the term is usually restricted to the preparation of beers and ales from barley. The art of B. is of great antiquity. Inscriptions of Egyptian life show clearly that beer was a popular national beverage on the banks of the Nile 3000 years before the Christian era. A short summary of the main processes involved in B. is given before describing the operations performed in greater detail. (1) The grain of the barley is first converted by a process of germination into malt, which is when steeped in hot water, whereby, by means of a chemical reaction to be de-

scribed later, the starch contained in the malt is converted into sugar and dextrin. (2) The liquid, now called the wort, is drawn off and boiled with hops (see Hops), which impart a bitter flavour together with preservative properties. (3) The wort is transferred to large vessels and yeast is added, which causes the process of fermentation to set in, in which the sugar contained in the liquor is converted into alcohol. (4) Finally, the liquor is drained from suspended matter and stored for periods varying with the variety of beer. In no industry are the condition and chemical composition of the raw materials of greater importance than in the manuf. of beer, and a description of the 3 substances—barley, water, and hops—which form the basis of the manuf., will now be given.

Barley.—Grains of barley are mainly composed of starch, water, cellulose, and certain albuminoids. Starch, which forms the largest constituent of the grain, is the foundation substance of the B. process, since it is the source of sugar, alcohol, and dextrin. The varieties of barley (see BARLEY) which are found to yield the brewer the best results are the 2-rowed and 6-rowed varieties, and of these the Spratt-Archer and Plumage Archer 2-rowed varieties, produced in the United Kingdom are the most widely grown and used to-day. Before the Second World War considerable quantities of 6-rowed barley were imported from California and other places for brewing in this country, but these supplies are not now available. The valuation of barley is carried out by an observation of its physical properties, although breweries nowadays widely resort to germination tests in their own laboratories to discover whether the grain will yield good results on the malting floor. The grains should be fully developed, completely ripe and even in size and colour, and carefully threshed to avoid damage to the outer coating. The appearance of a section cut across the grain gives an idea as to whether there is a good yield of starch or not. The character of the endosperm can be scientifically examined with the aid of a germinating machine. This is simply a vessel containing water with a perforated plate, in the holes of which the corns to be examined are placed and covered over with sand. After a few days the state of growth produced by germination is observed, and thus a measure of the germinating power of the grain is obtained.

Water.—The characteristic qualities of beers brewed in particular dists. are to be attributed largely to the inorganic compounds present in solution in the water supply of the dist. Thus the well-known Burton ales owe their characteristic qualities to the comparatively high percentage of calcium sulphate naturally occurring in the water of the locality. While it is necessary for the water used in B. pale ales to contain a proportion of calcium sulphate, for the production of stout it is essential to use water containing a minimum of dissolved salts or containing for the most part only such

salts as calcium and magnesium acid carbonates which will be precipitated on boiling. The modern brewer, however, is to a certain extent independent of the qualities of his water supply, since he can by artificial treatment add to or diminish the amount of dissolved substances present. Careful analyses of the different kinds of beers and ales have been made, and the percentage composition of the water supply has been tabulated in each case. Thus a 'Burton' ale can now be manufactured with a comparatively soft water supply by the addition of calcium sulphate to the water. Conversely a hard water can be used for the B. of stout after the calcium and magnesium sulphates have been precipitated by boiling with sodium carbonate.



BREWERY MALT HOUSE

Barley, in process of germination, being turned on the floor.

Hops.—Hops used by brewers are the fruit of the female plant (*Humulus lupulus*), consisting of bright yellowish-green cones. The colour of the flowers and the aromatic smell of the hops are qualities which help in the task of valuation. Good hops should feel clammy when handled, although the presence of mould arising from dampness is extremely undesirable. The compounds present in the hops which play a part in the B. process are chiefly tannin, essential oils, resins, and diastase. The essential oils contribute the aromatic flavour, while the resins are responsible for the preservative properties and partly for the bitter principle. The bitter taste supplied by the use of hops overcomes the somewhat sickly taste of the malt, and their use helps to avoid the souring of beer by preventing the further fermentation of alcohol into acetic acid. They also help to precipitate nitrogenous matter and hence to clarify the wort in the boiling process.

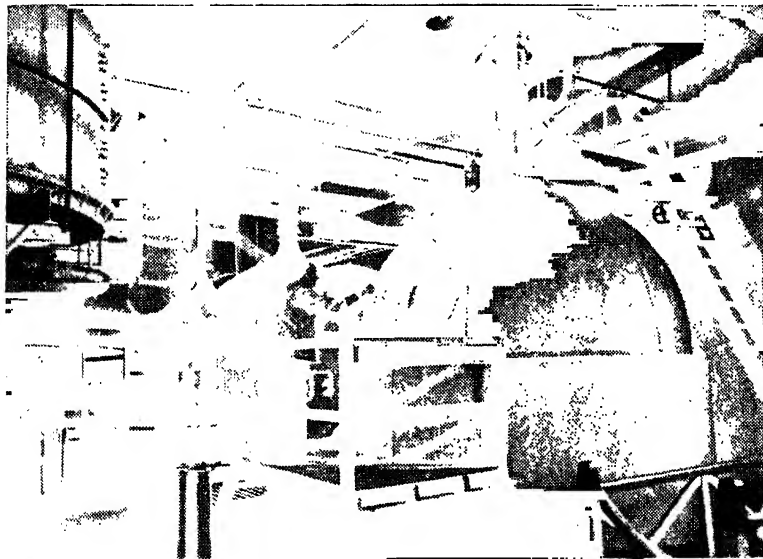
Manuf. of Malt from Barley.—The

initial treatment of the barley is termed screening, and consists in freeing it from dust and extraneous matter by sifting and cleaning the grain. The prepared grain is then ready for the malting process, whereby it undergoes important changes in constitution, chief of which is the secretion of an enzyme called diastase. The enzymes are a class of substances which possess the property of being able to decompose certain organic compounds such as starch and sugar into simpler substances. There are 2 methods followed in the malting of barley, the 'floor' method and the 'pneumatic drum' method. In the floor method the barley is first steeped in water for a period of 2 or 3 days. It is to be noted that although the water in which the grain is steeped is changed every 24 hrs., its composition has an effect on the ultimate product of the brew, and so the nature of the water supply for the steeping operation has to be taken into consideration, as well as that used in the boiling and mashing processes. During steeping, the grain absorbs the necessary moisture for germination, swells in size, and becomes full and soft. The operation is carried on in cisterns having draining racks at the bottom to facilitate the changing of the water. After steeping, the grain is placed in heaps on the malting floor. This is situated in a dark, well-ventilated building in a dry position, concealed from the sun's rays, and having thick walls so that the temp. can be maintained constant. It is essential that the germinating process should be kept well under control, and should proceed uniformly throughout the material. Heat commences to be evolved as the grain in the middle of a heap germinates, and the heaps are constantly raked over, so that no part of the grain germinates quicker than another. The temp. and ventilation of the house are also controlled, the former being kept at about 60° F., and water is occasionally sprayed over the grain. The process of 'pneumatic' malting, which is of modern invention, is similar in principle to that just described, the improvement consisting in the fact that, instead of being spread on a floor and raked by hand, the grain is placed in revolving cylinders of such construction that their ventilation and temp. can be controlled. Under the influence of warmth and moisture germination commences within the corn. Carbon dioxide (carbonic acid gas) is given out by the young seed, the albumen inside the grain being consumed, and the embryo at the base of the starchy matter commences to grow. The rudiments of the stem, or acrospire, begin to grow after about a day on the malting floor. The process of malting is complete when the acrospire has attained the opposite end from which it sprang. As the acrospire would in the natural course of things shoot forth with the formation of a leaf after this, steps are taken to stop further growth, the internal changes which the maltster desires, viz. conversion of part of the starch into sugar and mucilage, having now taken place. The arresting

of further growth is performed in the drying kiln, where the malt is spread on a floor above an oven. Moisture is first driven off by the application of a moderate heat, and then the temp. is raised to the neighbourhood of 170° F., in order that the 'withering' process may be effected.

Mashing.—The malt is now ready to be used in the B. process proper. The system of B. described is that chiefly in use in the United Kingdom. As the different processes of B. consist in the successive treatment of the extract

and the effect of the machine is to deliver into the mash-tun a mixture which has something of the consistency of porridge. The mash-tun is a large iron vessel containing a false bottom, and with a shaft passing through its centre to which is fixed a system of stirrers. Into the bottom of the mash-tun a certain amount of hot water is run. It is in the mash-tun that the enzyme diastase, secreted during the mashing process, acts upon the starch of the malt. In the presence of the tepid water the diastase converts the starch



Bass, Ratcliff & Gretton Ltd.

BREWERY COPPER ROOM

Hops are being added to the wort.

obtained from the raw materials, it will be seen that it is advantageous to make the brewery a fairly high building, so that the liquid can be drawn off after treatment in one vessel and allowed to run into a receptacle on a lower storey, where the next operation can be carried out. At the top of the building are placed hoppers containing grist, together with a cistern containing water heated to about 170° F. 'Grist' is the name given by brewers to the crushed malt, and is prepared by passing the dried malt between steel rollers. The mash-tuns are placed below the hoppers, but on its way to the mash-tun the grist has to pass through the mashing machine. This is a cylindrical iron vessel through which passes a revolving shaft carrying blades fixed at right angles to the axis. Warm water is admitted at the same time as the grist,

into malt sugar or maltose and dextrin, and as excess of the enzyme is present, it is capable of transforming a further quantity of starch, which may be added in the form of unmalted barley, or, as is done on the Continent, in the form of potato starch or rice flour. Another important chemical reaction also goes on in the mash-tun, resulting in the production of soluble albuminoids, which are necessary later on in order that the yeast may ferment the wort properly. The amount of water added and the temp. and consistency of the mash are varied according to the kind of liquor to be brewed and the previous preparation of the malt. Danger of the formation of acetic acid occurs if the mashing temp. is much higher than 150° F. After the liquid is stirred the tun is covered up and left for 2 or 3 hrs., when the action is complete, practically

all the starch having been degraded. The products of the reaction are separated by means of filtration through the false bottom of the tun, but after this operation has been performed a further supply of the liquor, which is now called wort, is extracted from the remaining solid matter by 'sparging.' Sprinklers supplying hot water are made to revolve inside the mash-tun, whereby the remaining wort is extracted.

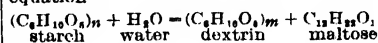
Boiling Process.—The wort is then run into large boiling coppers, which are situated on the next lower stage of the brewery, and hops are now added. The function of the hops in preserving and bittering the beer has already been referred to, but in the boiling copper they perform another function in that the tannin matter they contain precipitates excess of albuminoid matter which would otherwise cause trouble later on. The boiling is continued for about 2 hrs., and the liquid is then passed into a draining vessel, where it is freed from remnants of the hops and suspended matter. It is then cooled by means of refrigerators. Rapid cooling is resorted to in order to prevent the formation of acetic acid. It is then run into the fermenting vessel.

Fermentation.—The initial temp. of fermentation is of the utmost importance, and for different kinds of beer it varies somewhat, the average temp. being about 58° F. The temp. of the fermenting vessel is maintained at the required value by means of an attenuator, a pipe passing through the vessel through which hot or cold water may be circulated as required. The initial temp. of the wort in the fermenting vessel is called the 'pitching' temp. If the pitching temp. is too high the fermentation will go beyond control, while if it is too low the taste of the beer will be spoilt. Yeast is now added, and the fermentation (*see* FERMENTATION) commences. The yeast cells feed on the sugar present in the wort and rapidly increase in number, large quantities of carbon dioxide being evolved. The quality and freshness of the yeast employed are of great importance. The carbon dioxide evolved in contact with glutinous matter forms a frothy 'head' in the fermenting vessel sometimes 2 ft. in height. Rapid propagation of the yeast cells occurs, and hence a large crop of yeast results, which rises to the surface. The danger which has to be guarded against is the production of acetic and lactic acids, which are produced if the yeast has contracted acidity or putrefaction, and which spoil the taste of the beer. The best yeast is obtained from that formed in the B. of porter. The amount of yeast to be added depends upon the condition of the wort and upon the state of the malt originally used, a malt dried at a high temp. or a 'patent' malt requiring more yeast to be added in the fermenting vat than other varieties. In some breweries the whole of the yeast is added at one time, while in others amounts are added at varying periods. As the fermentation proceeds an increasing vol. of carbon dioxide is given off,

which eventually bursts through the glutinous surface, and after this has taken place the yeast formed at the top of the liquid becomes more compact. The yeast is then skimmed off in order that the beer may not be contaminated with any putrefying matter. During the process of fermentation, which lasts usually for 3 or 4 days, the temp. may rise as much as 20° F., but by means of the attenuator this can be kept within safe limits. It is necessary to prevent the acetous fermentation which would follow the alcoholic fermentation from now taking place, and this is achieved by the process of cleansing.

Cleansing.—Cleansing is effected by running the beer into a large vessel in the cleansing house. From this vessel it is run into casks, which in a large brewery may number many hundreds. The bung-holes of the casks are left open, and the yeast which is still being formed within the beer works out of the holes gradually, and is collected by means of pipes in a trough. An alternative method of cleansing, much used with pale ales, is to add a quantity of hops to the fermented liquor, which carry down any remaining yeast with them on settling. If the beer still remains muddy in appearance after the cleansing process is completed, recourse is made to the use of 'finings.' Finings are usually made by dissolving a substance called isinglass in sour beer so as to form a mucilage, and a little of this added to the liquor has the effect of precipitating any suspended matter. The liquor is now ready for storing, which should be done in casks in a cellar where the temp. can be kept low. Mild ales can be sent out to the consumer direct, but pale and bitter ales require sev. weeks' storage.

Chem. of B.—The chief chemical reactions in the B. process are brought about by means of enzymes, a class of compounds to which reference has already been made. The enzymes are albuminoid substances, characterised by the property of being able to decompose certain carbohydrates into substances of simpler constitution, the decomposition being brought about by the addition of a molecule of water, and thus being one of hydrolysis. The secretion of the enzyme diastase during the mashing of the grain has already been referred to. Diastase attacks the starch in the malt, and converts it partly into dextrin and partly into a sugar called maltose. The chemical equation



summarises the facts just stated, although it is probably not a correct statement of the mechanism of the reaction. The boiling of the wort after it has been extracted in the mash-tun prevents this diastatic fermentation from proceeding further. During the process of fermentation the sugar thus produced is converted into alcohol. The function of the yeast in the process of fermentation was the subject of an historic controversy between

Liebig and Pasteur. Liebig promulgated the theory that when a nitrogenous body like yeast decomposes, a disturbance of the equilibrium within the molecules occurs, and under the influence of this disturbance the neighbouring sugar molecules are disrupted. Pasteur showed, however, that yeast is composed of living cells which require oxygen for their existence, and for the carrying on of the fermenting process. A distinction was for long made between the action of enzymes like diastase, which is an amorphous substance, and apparently lifeless, and that of living organised ferments like yeast. The researches of Buchner, however, have shown that the views of both Liebig and Pasteur were true to a certain extent. Buchner extracted what he called 'expressed yeast juice' from dead yeast cells, and found that it contained a substance which could set up fermentation by itself, and which he called zymase. It is evident that this substance is an enzyme formed by the living yeast cell, and that it decomposes the sugar when it comes into contact with it in the fermenting vessel. The distinction between lifeless enzymes and living organised ferments has therefore to a large extent been proved to be meaningless.

Analytical Tests used in B.—It is of importance in the case of malt to know the amount of malt extract it will yield and also its diastatic activity. The first quantity is estimated by digesting a weighed quantity of ground malt with water and measuring the density of the filtrate after it has been diluted to a definite vol. From this value of the density it is possible to calculate the amount of malt extract in the sample since standard researches have been made to determine the alteration in density effected by dissolving 1 gm. of malt extract in 100 c.c. of water. Upon the diastatic capacity of the malt depends its power of converting starch into sugar, and hence its determination is a matter of some importance. The method used is to estimate the time taken for the process of saccharification to be completed. It is well known that when a drop of iodine is added to starch solution a distinctive blue colour is produced, which serves as a test either for free iodine or for starch. A sample of the wort is prepared and a drop of iodine solution added to a small quantity of it. The operation is periodically repeated, and when no coloration results it is known that all the starch in solution has been degraded, and the time which has elapsed is a measure of the diastatic capacity of the malt. The analysis of the wort is made in order to determine the amount of fermentable sugar present. This is carried out by means of Fehling's test and polarimeter readings. Fehling's solution is a solution of copper sulphate and Rochelle salt, and when added to a solution of a sugar (other than cane sugar) a bright red precipitate of copper oxide is obtained, and thus a method of estimating by titration the total sugar in the wort is obtained. The explanation of the use of the polarimeter is as follows. Both

maltose and dextrin give solutions which are said to be optically active, i.e. when a ray of polarised light is passed through them the plane of polarisation is rotated through a certain angle. This remarkable property is always found in the case of substances like the carbohydrates in question, which possess a carbon atom within the molecule that is linked to 4 other different atoms. By means of the polarimeter the amount of rotation suffered by the plane of polarisation of a ray of polarised light passing through a known length of solution can be determined. Now the amount of sugar present has been first estimated by Fehling's solution, and hence by consulting tables the angle of rotation due to this constituent can be obtained. Subtracting this from the total rotatory power observed, the rotatory power of the other constituent—the dextrin—is known, and from this value, with the aid of tables, the amount of dextrin present can be calculated. The percentage of dextrin and maltose present in the wort is thus known. The ratio of dextrin to maltose in the wort is a matter of great importance, since it influences the subsequent fermentation, the presence of too little dextrin producing a 'thin' weak beer.

Varieties of Beer.—The 2 main varieties of beer consumed in the United Kingdom are ales and stout. Ales are of 2 kinds, mild and bitter, and their difference in taste is due to the fact that a larger amount of hops has been used in the case of the bitter ale than in the case of the mild. They are manufactured from pale malt which has not been heated to a high temp. in the malting kiln. The process of slow fermentation which goes on in the casks while the ale is being stored and the consequent formation of carbon dioxide is the source of the refreshing and 'sparkling' qualities which characterise this beverage. In order that this slow fermentation may take place, the presence of a certain amount of fermentable sugar in the casks when they are stored is necessary. It is to ensure this that the temp. of fermentation in the B. of ales is kept low, 70° F. being the maximum temp. Care is also taken over the skimming process, in order to prevent acetous fermentation. Stout is prepared from dark and patent malts, to which it owes its colour. As has already been pointed out, it is necessary that the water supply in this case should be comparatively soft, that in the neighbourhood of London and Dublin having been found most suitable for the purpose. Lager beer is a well-known Ger. beer and is now brewed in England. Its preparation differs from that of ale and stout chiefly in the pitching temp., the slowness of the fermenting process, the use of 'bottom' yeast, and the method of storing at a very low temp. The slow method of fermentation enables the yeast plant to consume the proteid matter present, and consequently there is less chance of souring occurring through putrefaction. In the bottom fermentation process, bottom yeast is employed, a variety so called on

account of the fact that it remains at the bottom of the tun instead of rising to the top like the better-known variety. The 2 varieties are similar in appearance, but the bottom yeast is composed of smaller cells. The fermenting tuns are smaller than those used in the Eng. system, and are placed underground, the temp. being kept low by means of refrigerators, which results in the solution of a maximum amount of carbon dioxide. The action lasts about 12 days as compared with 3 days in the Eng. process. The resulting beverage contains much more carbon dioxide in solution than ordinary pale ale, while it contains less alcohol. In recent years there has been a notable increase in the production of bottled beers as compared with barrel beer. This has been brought about in large measure by the revolution in road transport.

Beer Duty.—For every 36 gallons where the worts were, before fermentation, of a specific gravity of 1.027° or less, the duty is (April, 1948) £8 18s. 10½d., and for every additional degree in excess of 1.027°, 6s. 7½d.; and so on in proportion for any less number of gallons.

Consumption of Beer in the United Kingdom.—The production and consumption of beer in the United Kingdom showed a gradual decline until 1933, when the consumption began to recover and has continued to do so, subject to war-time restrictions, up to the present time. In 1899, 37,404,000 barrels of beer were made, and 58,744,000 bushels of malt and corn were used, while the corresponding figures for 1910 were 33,471,000 barrels of beer and 50,069,000 bushels of malt and corn. In 1914 the number of barrels was returned at 37½ million; by 1933 this figure had fallen to 19 million barrels. By 1945 the production had risen to 32½ million barrels, but since that time with restriction of materials the figure has remained at the level of about 30 millions.

Revenue from Beer.—The United Kingdom derives a large proportion of its revenue from the duty on beer. In 1925 the chancellor of the exchequer was enriched from this source to the extent of £75,825,828; in 1946 the revenue was over £300,000,000. The world's largest breweries are those of Guinness & Son in Dublin and Bass & Co. in Burton-on-Trent, though the Schultheiss-Patzner brewery in Berlin was as large. Its of interest from the consumers' point of view to record that whereas the well-known brands of beer which used to be retailed in the public bars and hotels throughout the kingdom before the First World War at 3d. per half-pint bottle are now retailed at 1s. 6d. (1948).

See A. C. Chapman, *Brewing*, 1912; W. H. Nithsdale and A. J. Manton, *Practical Brewing*, 1913; J. B. Mackenzie, *Brewing and Malting*, 1921; H. F. Lutz, *Viticulture and Brewing in the Ancient Orient*, 1922; R. H. Hopkins and C. B. Krause, *Biochemistry Applied to Malting and Brewing*, 1937; H. L. Hind, *Brewing Science and Practice*, 1938-40; F. G. Walter, *The Manufacture of Compressed Yeast*, 1940.

Brewood, tn. situated in Staffordshire, England, 8½ m. from Stafford. Pop. 3000.

Brewster, Sir David (1781-1868), Scottish philosopher, b. at Jedburgh. His father was rector of the grammar school in that tn. He was sent to Edinburgh Univ. at the age of 12 to study for the Church of Scotland, but his bent was towards natural science. He finished his course in divinity, but never entered into active ministry in the church. The study of the diffraction of light became the ruling passion of his life, and he contributed a series of papers on the results of his investigations to the scientific journal known as *Philosophical Transactions*. In 1802 he became editor of the *Edinburgh Magazine*, and in 1808 of the *Edinburgh Encyclopædia*, in which he wrote sev. important scientific articles. In 1816 he invented the optic toy known as the kaleidoscope. Wheatstone's stereoscope he greatly improved by substituting lenses for the mirrors which the inventor had used to combine the pictures. But his name will be eternally associated with the dioptric apparatus, i.e. a method of lighting adopted in lighthouses in which the illumination is generated by a central lamp, the rays from which are transmitted by an arrangement of lenses surrounding it. The invention of the apparatus has been accredited by some to Fresnel, but B.'s claim is probably stronger. The introduction of the apparatus into Brit. lighthouses was due to the energy and zeal of the scientist. In 1819 B. continued his literary work by becoming, with Robert Jameson, joint-editor of the *Edinburgh Philosophical Journal*, which succeeded the *Edinburgh Magazine*. B. split partnership with Jameson in 1824, and started a new journal entitled the *Edinburgh Journal of Science*. He contributed many valuable scientific articles to the seventh and eighth eds. of the *Ency. Brit.* He wrote some *Letters on Natural Magic* (1832) which he addressed to Sir Walter Scott, an entertaining little vol. called *More Worlds Than One*, and a book named *Martyrs of Science*, 1841. But his literary fame will rest chiefly on his *Memoirs of the Life, Writings, and Discoveries of Sir Isaac Newton* (1855), to the investigation of which he devoted great patience and scrupulous precision. To suggestions of his in an article in the *Quarterly Review*, the Brit. Association for the Advancement of Science owes its origin. B., Babbage, and Herschel were the active shapers of its constitution. In 1832 B. was knighted, and in 1838 he was appointed prin. of the colleges of St. Salvador and St. Leonard, St. Andrews. He had many European honours, and was one of the 8 foreign associates of the Fr. Institute. In 1859 he was made prin. of Edinburgh Univ., where he remained till shortly before his death, which took place at Allerly, Melrose. In the old quadrangle of Edinburgh Univ. is an imposing statue of this eminent scientist. See L. Playfair, *Sir David Brewster*, 1868.

Brewster, William (c. 1566-1644), Amer. colonist, one of the prin. men of the

Pilgrim Fathers, *b.* at Scrooby, Notts. After holding sev. secretarial appointments, he became post (the postmaster responsible for relays of horses) in his native tn. of Scrooby. In 1606 he helped to form a Separatist Church. He suffered persecution, but at last obtained a land patent from the Virginia Company. In 1620 he sailed on the *Mayflower*, and helped to found Plymouth colony.

Brewster Sessions, the ann. meetings of magistrates or justices to hear applications for licences or renewals of licences, by retailers of intoxicating liquors. They are held during the first fortnight of Feb. B. S. are regulated by Section 10 of the Licensing (Consolidation) Act, 1910.

Bfezing, Otakar *see* JEBAVY.

Brialmont, Henry Alexis (1821-1903), Belgian general and author, was the son of Gen. Laurent B. In 1843 he passed from the military school at Brussels into the army as sub-lieutenant of engineers. From 1843 to 1874 he rose to the rank of major-general. As major-general he became director of fortifications in the Antwerp dist., and within the year inspector-general of fortifications and of the corps of engineers (1875). It was probably the unpopularity of his elaborate schemes for reformed fortifications at home that induced him to accept an offer from the Rumanian Gov. to take over the direction of the works necessary for the country's defence. He actively identified himself with the scheme which raised Bucharest to a first-class fortress. In 1884 he was reinstated in his former command of the Antwerp dist., and was responsible for the fortifications at Namur and Liège. Among his publications may be mentioned his last, entitled *Propriétés de la défense des États et de la fortification permanente depuis l'aube*, 1893. In the First World War B.'s forts at Liège and Namur proved to be unable to withstand effectively the fire of the Skoda guns brought against them by the Gers.

Brian, surnamed **Boroimhe** (Boru) (c. 926-1014), belonged to a tribe of N. Munster. When his brother, the king of Munster, *d.* in 976, he ascended the throne and began his career of conquest. On subduing Leinster, he next overcame the Danes estab. near Dublin, and after killing Malachy, the king of Ireland, was himself recognised as *ardri*, or ruler of his country. Successful in many battles against the Danes, he was killed in one at Clontarf, April 23, 1014.

Brianchon, Charles Julien (1785-1864), Fr. mathematician, *b.* at Sèvres. He became assistant director general of the manuf. of arms in France, and later prof. of applied science at the École d'Artillerie. Among his works are: *Mémoire sur la poudre à tirer*, 1823; *Essai chimique sur les réactions foudroyantes*, 1825.

Briançon, tn. in the dept. of Hautes-Alpes, France. It is one of the highest tns. in Europe, situated 4300 ft. above the level of the sea. It is about 160 m. by rail from Marseilles. It is strongly fortified. The manufs. are scent, leather, silk, and turpentine. B. is on the site

of the old Rom. stronghold Brigantium. Pop. 5600.

Briand, Aristide (1862-1932), Fr. statesman, a Breton *b.* at Nantes, son of a small Breton farmer. B. was 11 times premier of France, and one of the 3 leading Frenchmen who immediately prior, during, and after the First World War directed Fr. policy, the other 2 being Raymond Poincaré and Georges Clemenceau. An entire mastery of oratorical effect, combined with great natural talent for speaking, made of him one of the greatest Fr. speakers of recent times, besides ensuring him phenomenal parl. success. He came from Nantes to Paris in 1893 but had to wait until he was 40 years of age before journalism and the Bar opened for him a political career with a seat in the Cabinet.

While still studying law, B. was drawn into socialist politics and journalism. He wrote first for *Le Peuple*; then he became editor of *La Lanterne*, from which he passed to *La Petite République*, and finally founded, with Jean Jaurès, *L'Humanité*. In the *Lanterne* his daily column was headed 'Les Monstres en Soutane' (Monsters in Cassocks), which showed clearly the ardour of his early anti-clericalism. At that time his eloquent tongue was as busy as his pen, and in inter-party polemics very influential. Thus at the Socialist party conference held at Nantes, his native tn., the young B. secured the adhesion of the conference to the principle of the general strike, in face of the opposition of the veteran leader, Jules Guesde.

After certain unsuccessful attempts B. was first elected to the chamber in 1902. Here he at once came to the front, for the question of the relations of Church and State was the question of the day. He was appointed *rapporteur* of the committee of the chamber appointed to consider the law governing the religious congregations, and it was, perhaps, due to his influence that the law was passed with but slight modification. His first term of office came in 1906, when the premier, Sarrien, offered him 'the post of minister of public instruction and worship, a position which he accepted so as to be able to carry through the secularisation law he had been instrumental in framing. His acceptance of office in a 'bourgeois' party led to his exclusion from the United Socialist party in Mar. 1906, his old colleague Jaurès leading the opposition to this collaboration. In Oct. 1906, Clemenceau, who had formed his first gov., in succession to Sarrien, invited B. to remain in his post, which he did, but in Jan. 1908 he was transferred to the ministry of justice.

On the fall of Clemenceau's gov. in July 1909 he was called upon for the first time to form a gov. of his own. This he did, adding to the presidency of the council the portfolios of interior and of public worship. It was during the life of this gov. that the railway strike of 1910 occurred. Finally breaking with his old Socialist doctrines, he arrested the strike committee, mobilised the railway reservists, and dismissed those who refused

this call to the colours. This action completely broke the strike, but it broke also his ministry. The question of the position of the discharged railwaymen, *les cheminots grévistes*, agitated Fr. politics for sev. years thereafter, and one of the first repercussions of the agitation was the withdrawal on Nov. 2, 1910, of B.'s minister of labour, Viviani, from his Cabinet. B. reconstructed the ministry on a basis which leaned more to the left, but a few weeks later (Feb. 1911) this ministry also broke up on the old question of the law relating to religious orders. Thereafter B. had a few months of comparative rest until Poincaré formed his first Cabinet on Jan. 13, 1912, when he offered B. the post of minister of justice. Twelve months later, on Poincaré's election to the presidency of France, B. again became premier, and it was during this brief administration that he extended the period of military service. On Mar. 18, 1913, this gov. fell on a defeat by the senate of its proposals for electoral reform. Thereafter until the outbreak of the First World War he remained more or less out of the public eye.

The war began another important phase in his life. At its outbreak, another ex-Socialist, Viviani, was in power. Desiring in the national crisis to broaden the basis of his gov., he made B. minister of justice on Aug. 26, 1914. Viviani's gov. came to an end on Oct. 29 of the following year, and B. was again called to the helm. In the gov. which he then formed he took also the portfolio of foreign affairs. This was the national gov. which included the Socialist Guesde, 3 ex-premiers (Bourgeois, Combes, and Freycinet), and even extreme conservative clericals like Cochlin. The difficulties of the war period led to this Cabinet being re-formed a few months later with Marshal Lyautey (q.v.) as war minister. When the latter resigned on Mar. 14, 1917, B. decided for a while to leave the conduct of the war and public affairs to others. From this retirement he did not emerge until about 3 years later, and when he did it was found that he had moved towards the left, as, indeed, had many other statesmen of that period of unrest. In Jan. 1921 Leygues resigned his office of premier, and B. was called upon to succeed him, which he did, taking also the portfolio of foreign affairs. The fulfilment of the treaty of Versailles was now the paramount question agitating Fr. politics and B. devoted himself to upholding Fr. interests, especially those connected with the reparations question. Questions of naval disarmament also came to the fore at this time, and in the autumn of 1921 B. attended the Washington conference as the leading Fr. representative. Early in 1922 he played his famous game of golf with Lloyd George, the Brit. premier, at the Cannes conference of the supreme conferences of the Allies. The news that B., who had no idea how to play golf, had been amusing himself in this manner, was taken to imply that he was giving no attention to business. Called back to Paris by a telegram from the

president, Millerand, B. found his position so undermined that he resigned on Jan. 12. He was again in office as minister of foreign affairs in Painlevé's gov. in Apr. 1925, and held the same position in a reconstruction of this ministry a few months later. It was while he held this position that the Locarno treaties (q.v.) were negotiated, pacts with which B.'s name is associated equally with that of Sir Austen Chamberlain. By the prin. pact the chief Allies and Germany jointly undertook to guarantee peace in W. Europe. This pact was concluded in Oct. 1925, and greatly heightened B.'s prestige, so that when Painlevé resigned on 22nd of the following month B. once more headed the gov. But France's financial difficulties were at this time so serious that the life of her govts. was short. On Mar. 8, 1926, B.'s gov. fell on a financial measure, and although he re-formed his gov. the franc's continued decline brought him down again following the resignation of Raoul Péret, his finance minister. B. tried once more with Caillaux (q.v.), but a month later he gave place to Herriot, whose gov. lasted but a few days. This period of instability ended when Poincaré, the ex-president, formed a ministry to deal with the financial question. This ministry came into office on July 21, and B. returned to his old post of minister of foreign affairs. From then, he held that post practically continuously, working for the reconstruction of Europe and its pacification. For this work he received, among other honours, the Nobel peace prize.

In the later work for peace with which he was prominently concerned, the Kellogg Pact (q.v.), B., in Apr. 1927, proposed to Mr. Kellogg, a treaty which had for its aim the abolition of war between France and the U.S.A. Mr. Kellogg suggested to B. that the scope of the proposed treaty should be widened so as to include all the powers, and that not only wars of aggression should be barred, as suggested by B., but that all wars be outlawed. B.'s acceptance of this latter extension resulted in what has been—perhaps prematurely—described as the biggest event in modern diplomatic hist.; and although the pact does not bear B.'s name, the event is inseparably associated with him.

At the ceremony of signing in the Salle de l'Horloge B. uttered these words: 'Peace is proclaimed. That is much; but it still remains necessary to organise it.' That these were no empty words B.'s next proposal for the federal union of Europe shows. This, the memorandum on a 'Régime d'Union Fédérale Européenne', dated May 1, 1930, was prepared by B. in response to the request of 27 European nations that he would specify further and more exactly certain tentative proposals that he had put before their delegates at Geneva. His plan proposed a general pact affirming the solidarity of European states. This was to be secured by a European conference on the lines of the League of Nations Assembly, but supplementary to it, a European political

executive 'Committee' on the lines of the League 'Council'; and a secretariat ultimately analogous to the League secretariat. By way of programme for the European organisation he proposed that (a) the economic aspect should be subordinated to the political, and (b) that co-operation should be through a federation founded on 'union' and not on 'unity.' By this he meant that there should be a union of free independent states, not a merging of national sovereignty into a unified authority—a distinct retrocession from his former attitude. B., though never studious, possessed remarkable intelligence, a power of rapid assimilation, and a profound memory. A wide experience of life gave him a deep knowledge of human nature; and the resultant of these qualities was a smooth path for him through the quicksands of Fr. parl. life. He was the born parliamentarian, to whose faculties the approach of a political crisis gave a keen edge. For most Frenchmen B. was a great figure in that he embodied for them the pacific solution of international difficulties and was veritably the symbol of the peace which he had tried to promote by the scheme of European federation. B. at all times upheld the Entente with Great Britain; but he found it more difficult to begin the renewal of friendly relationships with Germany, which found their first striking expression at Locarno. Like so many popular orators, B. was a great internationalist, though when the speeches were over and it came to action, it was usually found that he had remained a 'good Frenchman.'

Among B.'s writings may be mentioned his 2 vols. on the separation of the churches from the state, 1909, and a collection of his addresses on the subject of peace, *Paroles de paix*, issued in 1927. He d. on Mar. 7.

Briansk (or **Bryansk**), tn. of Russia, situated 120 m. N.W. of Ord, on the r. b. of the Desna. It trades with Riga and Leningrad in grain, hemp and hemp oil, honey, etc.; with Odessa in linen, iron goods, tar, lime, bark, cordage, and cables. An important stronghold and railway centre, B. played a great part in the Ger. struggle for Moscow in the last quarter of 1941 and later. It was captured by the Gers. on Oct. 12, 1941, but in Jan. 1942 the invaders were pressed back on a line from Rzhev through Vyasma to B. B. and its vicinity were the scene of much heavy fighting again in 1942 and 1943, especially in the summer months of 1943. For 2 years the Gers. had been diligently strengthening the defences of the pivotal centres of B., Smolensk, and Orel—a region in which forests and swamps and streams reduced the possibility of manoeuvre and hampered the mobility of armour and artillery, but which the Gers. developed into a 'hedgehog' system of defence, with strong points covering the chief avenues of advance. By late July 1943 the Russians were within 5 m. of the B. railway, and the Gers. then decided to retreat rather than risk a second Stalingrad. At the end of Aug. the

Russians struck heavily at the Ger. defences before B. and Smolensk (as well as in the Ukraine), and in the succeeding month the Ger. withdrawal in Russia became a general retreat. On the central front the capture of Novgorod-Seversky foreshadowed the fall of B., and by mid-September the protracted struggle for that stronghold was virtually decided and B. was ultimately taken by the Russians on Sept. 17 (1943). Pop. 32,000.

Brianza, hilly region of Italy, to the N. of Milan and to the S. of Lake Como. It is much frequented because of its charming mt. scenery, its fruitful valleys, and its delightful climate. It is densely populated, and is a favourite resort for the Milanese.

Briar, or **Brier** (*Rosa rubiginosa*), flowering plant of the rose family; also known as the true sweet B., or eglantine (*q.v.*). Other species are *R. inodora*, a slightly scented B., and *R. micrantha*, the small-flowered sweet B. Various species of Brit. roses of larger growth are known as B. roses, specifically the dog-rose (*R. canina*). See also *ROSE*.

Briare, tn. situated on the Loire, in the dept. of Loiret, France. It stands at the head of the canal de Briare. It manufs. buttons and a fine pottery; it also trades in coal, wood, and wine. Pop. 4000.

Briareus, see *Ægeon*.

Briar-root, hard wood obtained from the root stock of *Erica arborea*, the common heath-plant of S. France, which is largely used in the manuf. of pipes. *Bruyère* is the Fr. for heath, and the word has no connection with our briar.

Bribery, term, in Eng. law, with four-fold signification: 1. The offence of a judge, magistrate, or any person concerned in the administration of justice receiving a reward from parties interested for the purpose of procuring a partial and favourable decision. Since the revolution in 1688 judicial B. has been unknown in England, and since that date no case is reported in which this offence has been imputed to a judge in courts of superior or inferior jurisdiction. 'Embracery' is the offence of attempting to influence a jury corruptly to give their verdict in favour of one side by the promise of money or entertainment or by entreaties. The offence is a misdemeanour punishable by fine and imprisonment. A juror may be guilty of this offence if he corruptly influence his fellow jurors. 2. The receipt or payment of money to a public ministerial officer as an inducement to him to act contrary to his duty. B. of a public ministerial officer is a common law misdemeanour in the person who takes and also in him who offers the bribe. B. with reference to particular classes of public officers has become punishable by serv. Acts of parliament. B. of customs officials, officials of the inland revenue, and, under the Merchant Shipping Act, of officials of the board of trade is punished with heavy penalties. B. of officials invested with powers of local gov. or administering the rates is punishable with imprisonment up to 2 years, with or without hard labour, together with a heavy

fine and incapacity to hold any public office either for a number of years or for life. 3. The giving or receiving of money to procure votes at parl. elections, or elections to public offices of trust. The Corrupt Practices Act, 1854, deals with the offence of corruptly influencing a voter to give his vote in any particular way. The Representation of the People Act, 1867, enacts that a corrupt payment of rates to enable a person to be registered as a voter so as to influence his vote at any future election is B. All kinds of conduct have been held to be B. The conduct need not be dishonest provided there be an intention to influence the mind of the voter. Charitable gifts on an increased scale at Christmas may be B. when a certain vote or votes is or are aimed at. A promise of a bribe is B., and so is accepting a bribe even though one does not vote. Where the gift of money or entertainment takes place after an election, the giver is not guilty of B. unless something has happened before the election to raise the hopes of the voter. A mere offer of sale of a vote is not B. 4. Miscellaneous: corrupt presentation to a benefice is B., and buying and selling of public offices is also B. at common law. B. may, under a recent Act, be constituted by the taking of a secret commission. The gist of this offence is the making of a profit by an agent without the knowledge of his principal.

Brice, St., Fr. prelate, *b.* at Tours, in France, probably in the early part of the fifth century. Upon the demise of St. Martin, he was chosen bishop of Tours. He *d.* at his bp., and Nov. 13 was the day appointed in memory of him. Upon that day in 1002 a horrible massacre of the Danes was committed by King Ethelred's command.

Brick, a mass of clay, usually mixed with sand, fine coal ashes, small coal sifted, or other ingredients, tempered with water, shaped in a mould, and subsequently dried in the sun, and, in most cases, burned or baked in a kiln or a heap or stack called a clamp. The ancients used Bs. both baked and simply dried in the sun. Those found in the ruins of Babylon are among the oldest specimens existing. The Egyptians used sun-dried Bs., and the process of making them is represented in their paintings, some of which are peculiarly interesting from the light they throw upon the scripture narrative of the servitude of the Israelites. The Romans, according to Pliny, began to use Bs. about the decline of the republic; but there are yet remains of a B. building called the temple of the god Iedeculus, which is said to have been built on occasion of the retreat of Hannibal. It has been supposed that the Gks. did not use Bs. until after their subjugation to Rome; but passages from Vitruvius and other writers show that Bs. were in use before that period. The Gk. names for Bs. were *didoron*, *tetradoron*, and *pentadoron*, terms formed from *doron*, a hand-breadth, and describing their size as equal to so many hand-breadths. They appear to have been used simply dried, as Vitruvius

speaks of their requiring 2 years to dry, and of the laws of Attica requiring that 5 years be allowed for that purpose, and because further he warns against using them too new for fear of their shrinking. Rom. Bs. were very thin in proportion to their length and breadth, and were well burnt. They resemble tiles more than modern Bs., and are formed of various dimensions, from 7½ in. square and 1½ in. thick, or even smaller, to about 1 ft. 10 in. square and 2½ in. thick. In Persia Bs. are used both sun-dried and baked. The latter resemble Eng. clamp-burned Bs.; but the former are, like the Egyptian Bs., mixed with straw cut fine, to give them greater tenacity. In making ordinary Eng. Bs., the top soil, or *encallow*, is first removed from the clay, which is dug and turned over in the winter. Exposure to wet and frost prepares it for use by the spring, when fine ashes are added to it in the proportion of one-fifth ashes to four-fifths clay, or 60 chaldrons to 240 cub. yds., which will make 100,000 Bs. When much sand is mixed with the clay, forming what is called a mild earth, a smaller proportion of ashes may be used. This quantity requires also the addition of about 15 chaldrons, or, if mild, of about 12 chaldrons of breeze, which is a kind of coarse coal ash, separated by sifting, to aid the burning. The clay and ashes being well mixed by digging, watering, and raking backwards and forwards with a pronged hoe, the mass is removed in barrows to the *pug-mill*, which consists of an upright barrel in which a series of strong iron knives and teeth is caused to revolve by the power of a horse walking in a circular path, so as to cut and masticate the clay thoroughly as it passes from the top of the barrel to an aperture provided for its exit at the bottom. As the clay oozes out of the mill, it is removed with a *cuckold*, or concave shovel, and covered with sacks to prevent its drying too fast. A person called the feeder takes from the stock of clay thus prepared a piece about the size of a B., covers it with sand, and passes it to the moulder, who throws it with some force into a wooden mould of the size and shape of the B., which mould is previously sanded. Having filled the mould, the moulder cuts off any superfluous clay with a stick kept in a bowl of water by his side, and then removes the back and sides of the mould, after which the soft B. is transferred from the bottom board of the mould to a pallet-board, and, when a sufficient number have been moulded, is conveyed with others to the *hacks*, which are long, level lines raised about 4 in. from the surface of the field, and formed about 2 ft. 6 in. wide. The upper surfaces of the Bs. are previously sanded, and care is taken to avoid twisting or otherwise injuring their shape in transferring them to the hacks, on which they are laid in 2 rows, with a little space between each to allow the free circulation of air. One double row being completed, another is put upon them, and this is continued until the Bs. are piled from 7 to 10 high. When partially dried, the Bs. are removed,

placed diagonally, with wider apertures, and with the bottom Bs. brought to the top; and after this process, which is called *skintling*, they are removed to the kiln or clamp, which is a vast pile of Bs., laid together as closely as possible, on a slightly concave foundation of B. rubbish, the raised ends of which face the N. and S. On this foundation the new Bs. are built up in lots or *necks*, of which the centre one, which is first erected, is vertical, while the others, owing to the concavity of the foundation, have a slight inclination towards it. Small spaces, filled with breeze, are left among the lowest courses of Bs., and flues or *live-holes*, about the width of a B., and from 6 to 9 ft. apart, are also formed to aid the lighting of the clamp, and filled with dry bawns or wood. When full, the clamp is surrounded by old Bs., or by the driest of those newly made, and a thick layer of breeze is spread on the top. The external Bs. are coated with a thin plastering of clay; and, if the weather prove wet, the kiln is protected by *loos*, or hurdles interwoven with rushes. The fire is lighted at the mouths of the flues or live-holes, which are closed when it burns well; and in favourable weather the Bs. will be completely burnt in about 25 or 30 days, in the course of which time the cindery matter dispersed through their substance becomes gradually ignited and consumed. Such Bs. as are found to be imperfectly burnt are put into the next clamp to be burned again. Those which are sufficiently burnt are separated, according to quality, into—hard sound *stocks*; *placc*, or inferior soft red Bs.; and *burrs* or *clinkers*, which are black-looking masses of vitrified B., of very inferior value. Ordinary Bs. are moulded in this country 10 in. long, 5 in. wide, and 3 in. thick, and are reduced by drying and burning to about 9 in. long, 4½ in. wide, and a proportionate thickness. Kiln-burnt Bs. are, as their name implies, burnt in a kiln or an oven instead of a clamp, and have no ashes mixed with the clay. Marl or main stocks, which are either baked or burnt, take their name from the marl originally used in them, which has now given place to chalk. Dutch clinkers are a kind of small, hard, yellow Bs. Fire-bricks, also called Windsor Bs., are 1½ in. thick, and of a quality to resist the action of fire. Paving Bs., draining Bs., capping or coping Bs., coggling Bs., compass Bs., for wells and circular works, feather-edged or thin Bs. for the external parts of wooden buildings, and many other varieties of form, size, and quality, are made. In some cases a smooth or glazed surface is produced in the burning. There are 2 kinds of B. machine—one which works with clay in a semi-dry condition, and thus saves time in drying, and the other which works with moist clay. In the latter the clay is fed into an upright pug-mill which mixes it to the desired consistency and forces it out at the bottom over carrying rollers, so that it passes between 2 pressing rollers which force it through a die giving it the required size. The block is then cut into Bs. by wires on a frame which is

so arranged that the wires can cut rectangularly or at an angle. In the first machine the clay, already very solid, is forced by blades into shape on a revolving table which ejects them under a press. They are then ready for drying. The largest brickworks in the world are at Stewartby, Bedfordshire, England. See also POTTERY. See A. B. Searle, *Modern Brickmaking*, 1920; E. Dobson and A. B. Searle, *Bricks and Tiles*, 1936.

Brickfielders, term used in Australia to describe a hot wind which blows from the barren, sandy deserts of the interior. Like the strong 'southerly buster,' by which it is followed, it is occasioned by a cyclonic system over the Australian Right. It is a healthy wind in that its extreme heat and dryness destroy disease bacteria, but it parches vegetation and creates dust storms. Usually it blows sev. days together.

Bricklaying, see BRICKWORK.

Brick-making, see BRICK.

Brickwork, the judicious arrangement or fitting together of bricks to form a wall or other mass of building, so that they may mutually support each other, and that the strength of each individual brick, as well as that of the mortar or cement by which they are united, may be applied in the most effectual manner to aid the strength of the whole structure. This object, which is termed *bonding*, is accomplished by breaking or distributing the joints so that 2 may never come immediately over each other, and by laying some of the bricks as *stretchers*, or stretching courses, with their length in the direction of that of the wall, and others, which are called *headers*, with their length running across, or in the direction of the breadth or thickness of the wall. The bonds in most common use are *English bond*, consisting of alternate layers or courses of headers and stretchers; *Flemish bond*, in which headers and stretchers are laid alternately in the same course, the headers of one course being laid across the middle of the stretchers of the course below it; *garden-wall bond*, consisting of 3 stretchers and 1 header in the same course; and *herring-bone bond*, which is sometimes used in the case of very thick walls, and is produced by laying the bricks at an angle of 45° with the direction of the wall, and reversing the inclination of each successive course. Whenever it is necessary, in order to prevent the *perpends*, or vertical joints, coming immediately over each other, a half, quarter, or three-quarter brick, or *bat*, is used to commence or finish a course. Walls the thickness of which is 9 in. or equal to the length of 1 brick are called single-brick; those half that thickness, half-brick; and others brick and a half, 2 bricks, 2 bricks and a half, etc. Arched and groined work requires peculiar care, and in many cases the cutting of the bricks to fit each to its particular bed; and in ordinary house-building neatness is called for in the formation of the flat arches over doorways and windows. *Mortar*, the cement usually employed for it, is composed of either grey or white lime (the grey or

stone lime being preferable), and riv., sea, or road sand, mixed with water in the proportion of 1 part of grey lime to $2\frac{1}{2}$ of sand, or 1 of white or chalk lime to 2 of sand. The dipping of the bricks in water as they are laid makes them adhere more firmly to the mortar. *Putty* is a very fine kind of mortar, made of lime and water only, used for delicate purposes, and such as the setting of rubbed or gauged arches, where the joints are visible. The foundations of a wall are always laid broader than the superstructure, and the broader courses are termed *footings*, the projections themselves being called *set-offs*. Garden walls are usually strengthened with piers or buttresses projecting $4\frac{1}{2}$ in. at intervals of 10 or 12 ft. When new walls are joined on to old, it is usual to take out a brick or part of a brick from every alternate corner of the old work, in order to *tooth* in the new work; and these toothings are left in the first building when it is intended to join new work to it. In many cases, also, strips of iron hooping are laid in the horizontal joints, to afford a further bond or tie between the old and new B. B. is measured by the rod of 272 superficial feet. See N. Lloyd, *A History of English Brickwork*, 1928; W. Frost, *The Bonding of Brickwork*, 1933; F. Walker, *Brickwork*, 1937.

Bride (Teutonic word; O.E. *bryd*), a term used of a woman about to be married, also during the first year of her married life. With it are associated many other words, such as 'bridegroom,' 'bride-bell,' now known as 'wedding-bell,' etc. In former times the friends assembled in the church porch, to throw grains of wheat over the bride; but paper confetti is now generally used. Small cakes prepared for the wedding breakfast replaced the wheat, which developed into the large cake which is the custom of the present day.

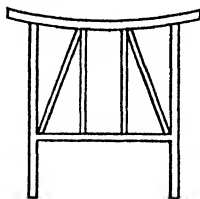
Bride, St., see **BRIGHT, ST.**

Bridel, Philippe Cyriaque (1757-1845), Swiss writer, better known as the 'doyen Bridel,' was successively pastor at Basle, Château d'Oex, and Montreux. As his *Poésies helvétiques* were pub. in 1782, he may justly be considered the first Vaudois poet. He is celebrated for his delightful, if not always accurate, descriptions of his travels, and especially of the peasants and his wanderings over the Alps. His style is simple and unaffected, and all his work glows with the warmth of patriotic sentiment. His *Course de Bâle à Bienne par les Vallées du Jura* appeared in 1789, whilst much of his descriptive writing is in *Étrennes helvétiques* and *Conservateur suisse*, 1783-1831.

Bridewell, hospital in Blackfriars, London, which once was used as a work-house and house of correction. The name is derived from a well dedicated to St. Bride, and from which the par. of B. is called. With the exception of the hall and some offices, B. house of correction was demolished in 1864.

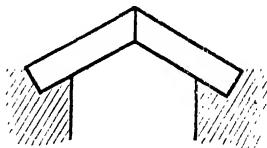
Bridge, construction which provides a continuous path or road over water, valleys, ravines, or above other roads. The term is applied also to cases in which some part of the B. is temporarily re-

movable, or in which a suspended platform conveys passengers or goods across a space; those carrying water are termed aqueducts. Timber, being readily worked by primitive tools, was, no doubt, the material first used for the construction of Bs. by art—simple beams on natural piers or supports. The making of artificial supports would, where needed, follow. Herodotus speaks of a B. of this type across the Euphrates at Babylon, consisting of beams resting on stone piers



AN EGYPTIAN TRUSSED FRAME

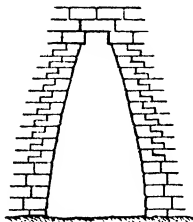
—ascribed to the time of Semiramis, 2230 B.C. The span of a simple beam B. being limited to the length of timber available, or capable of being handled by crude appliances, some form of truss construction would develop in course of time, probably a long time. Trussed construction in which pieces of timber are arranged as a stable frame was known in Egypt in the 20th dynasty, 1200 B.C., evidence of which is found in existing examples of the trussing of the parts of light domestic furniture of that era. It is interesting to note that though the Egyptians at that time understood the



AN ARCH OF THE GREAT PYRAMID

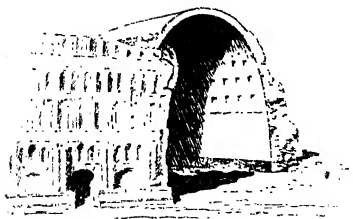
use of a truss, and were great builders in masonry, they made little use of the arch at any period, the nearest approach to this of early date is the placing of 2 inclined stones to abut against walls at their lower ends, and against each other at their upper ends in the middle of the opening as seen in the Great Pyramid, 4000 B.C. Later they made some use of a true brick arch, for underground work only. In Chaldea, arches of unburnt bricks have been found dating from 4000 B.C., while at Tell-lo, in Babylonia, burnt bricks were adopted for the same purpose. Existing bas-reliefs from Assyria, of 880 B.C., show that semicircular arches were used over gateways. The Gks. do not seem to have used the arch, though they

represented it upon sculptures; possibly they distrusted it, for, as an old Hindu proverb says, 'an arch never sleeps,' Mexican remains, of 1000 B.C., at Palenque show constructions suggestive of the arch, but are in reality corbelled work, the arrangement of the stones plainly indicating the corbel principle. Under Etruscan influence there was built in Rome, 600 B.C., the Cloaca Maxima, having an arched roof of semicircular form,



CORBELLED WORK AT PALENQUE, MEXICO

15 ft. span at its wider end. The evidence as to an early knowledge of arch-construction is conclusive, though not yet as applied to Bs. An instance, which by the size of its arches implies a yet earlier knowledge of masonry applied to this use, is that of the B. (Pons Milvius) built a short distance from Rome, 100 B.C., which appears to have had spans of from 50 to 80 ft. Upon Trajan's column (A.D. 100), there is represented the B. built by him across the Danube. Great doubt exists



ARCH AT THE PALACE OF CTESIPHON

as to the width of openings, which were spanned by timber arches, but as the piers are said to have been 150 ft. high, these were, no doubt, considerable—Gibbon says over 100 ft.—as masonry arches would probably have been adopted for a more moderate span. The Romans were indeed from this time forward great B. builders; many of their works (if we include aqueducts) are still in use, or at least standing. The semicircular arch was with them the rule. That it was possible to build arches of forms other than this, though perhaps not unknown to the Rom. engineers, was only appreciated early in the Christian era, first

appearing in the architecture of buildings, in archways, and domes. In Persia, the palace of Terbutan had a dome of elliptical form, A.D. 350. The palace of Ctesiphon, near Bagdad, has an arched hall 86 ft. wide, of a parabolic figure. Though applied to buildings, these works furnish proof that it was understood the semicircular form need not be slavishly adhered to, though in the construction of masonry Bs. it was long before any other than the circular arch came into use.

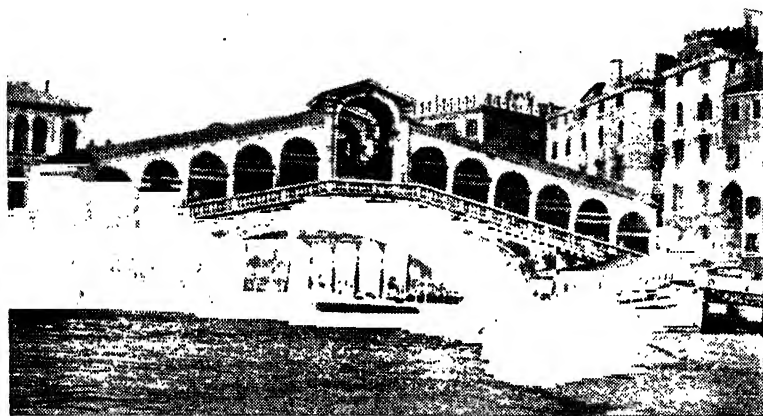
With the decline of Rome construction of Bs. lapsed, till the great revival in Italy 1000 years later. The art was not, however, entirely lost, for in 741 an aqueduct of great height, having 10 noble pointed arches, each 70 ft. span, was built at Spoleto by Theodoric, king of the Goths and about the year 1000 an arch of 120 ft. span was thrown across the R. Serchio. The originality and boldness of the early builders are well illustrated by the arched B. of 184 ft. span, rising 60 ft., built in 1454 over the R. Allier in France, and by the great arched B. of 251 ft. span over the R. Adda, of the latter part of the fourteenth century, later destroyed by Carinagnola. Regard for beauty is shown by such examples as the Trinità B. of 3 spans at Florence, by Ammannati, 1566, having a centre arch of 90 ft., and the Rialto B. by Antonio da Ponte, Venice, which has a segmental arch of 91 ft. span. In Great Britain, although refinements in Gothic art were practised from the advent of that style, in B. building structures were of rude design, first in timber, later with stone piers of great width, carrying arches, generally of semicircular, segmental, or blunt pointed form. Occasionally, as in old London B. (1200), chapels formed part of the structure, and, later, houses also were added on either side, between which the traffic made its way. Compared with structures built about the same time in other parts of Europe, London B. was a poor achievement, celebrated rather because of its associations than as an example of B.-building. There were also in this country numerous other Bs. in masonry, constructed, from about the date of London B., generally of small span as to the openings, and, where crossing rivers, ill founded.

There was, indeed, little advance in B.-building between the years 1200 and 1739 and 1760, in which two latter years old Westminster and Blackfriars Bs. across the Thames, by Labeleye and Mylne respectively, were commenced. The first of these is of note because of the method of founding the piers, by caissons or coffer, with a bottom which remained as part of the structure, and sides which were detachable; the second is of interest because it appears to be the first instance in this country of the use of the elliptical arch, which gave rise to a widespread discussion between mathematicians and others, in which Dr. Johnson took part, as to the practicability of constructing such an arch, notwithstanding that Ammannati's B. had been standing nearly 200 years. Both Blackfriars and Westminster Bs. failed eventually by sinking

of the piers. They are otherwise noticeable as having been the occasion for the use of centerings of remarkable skill, designed by Kung. A B. of a single arch was about this time being built at Pontypridd in Wales, of 140 ft. span, by Edwardes, who succeeded after 2 attempts ending in disaster. Smeaton, who built many Bs., experienced the same difficulty as Labelye and Mylne with his foundations, which led to a grievous failure in the case of the Hexham B. The fault at this time was chiefly the inability to found in water of any depth, perhaps a failure to appreciate the necessity for going deep into the riv-bed. The best-known examples of more recent times

same constructors, had 2 spans of 193 and 172 ft. respectively. Both these Bs. were of truss design. A B. of timbers arranged to form a somewhat flat arch of 208 ft. span, with stone abutments, was in 1809 built over the Regnitz, near Bamberg. Timber is not now used for large spans even where it is plentiful, the liability to decay, and difficulty of adequate repair, making it unsuitable for any but moderate openings, for which it still finds favour in America and Australia. Bs. formed of boats, or pontoons, connected by timbers, were used in early times. Xerxes crossed the Hellespont by this means in 450 B.C., and there are still in use Bs. of this kind.

Suspension Bs., in which a long, narrow



RIALTO BRIDGE, VENICE

John H. Stone

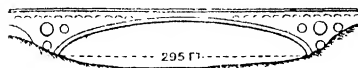
which were considered completely successful are the existing London and Waterloo Bs. by Rennie both the structures having elliptical arches of granite, that at the centre of London B. being 152 ft. span; but in recent years the centre piers of Waterloo B. settled so conspicuously that the L.C.C. decided on reconstructing it. (See WATERLOO BRIDGE.) The largest masonry arch in this country and, when built, the largest in the world, is that of the Grosvenor B. at Chester, 200 ft. span, built in 1833 by Hartley. This has long since been eclipsed, first in America, by the Cabin John aqueduct B. of 240 ft. span, later by the Luxemburg B. of 277 ft., and by the Plauen B. of 295 ft., built by Leibold in 1903. Bs. in timber of any but small dimensions do not seem to have been constructed except the solitary instance of that near Rome, A.D. 100, till about the middle of the eighteenth century, when the Wittengen B. of 390 ft. span was built by the brothers Grubermann. The Schaffhausen B., by the

floor is hung from, or carried upon, ropes or chains, are said to have been used in China at a remote date, and were certainly in use by the Incas of Peru, up to 200 ft. span, in the sixteenth century. In this country the first was constructed in 1741 for foot passengers only, having old pit chains suspended between the rocky sides of the R. Tees at Middleton. The design of suspension Bs. has received great attention, some of the largest spans being so formed with such improvements as were introduced at a later date. One of the earliest Bs. of note of this kind is the Menai suspension B., 1819, of 570 ft. span, by Telford, and later suspension Bs. are those crossing the East R. at New York, the Brooklyn, Manhattan, and Williamsburg, having centre spans 1596, 1470, and 1600 ft. respectively. The last has steel wire cables 18 in. in diameter, dipping 176 ft., supporting a deck 118 ft. wide.

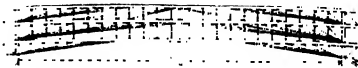
The first attempt to build any sort of metallic arch was that made at Lyons in France in 1755, finally abandoned; and

the first carried to completion, the B. at Coalbrookdale, a semicircular cast-iron arch of 100 ft., still standing. It was designed by Pritchard, no doubt assisted by Wilkinson, an ironmaster who advocated iron for many uses. Thomas Paine, author of the *Rights of Man*, having endeavoured in 1787 to secure the construction of a cast-iron arched B. over the R. Schuylkill, some of the ribs were

which preceded it, decided the claims of wrought iron to consideration, but the tubular type of construction has been but little imitated, the chief instance being the B. over the St. Lawrence at Montreal, 7000 ft. long. The box or cellular form of girder construction was soon succeeded by the simple web-plate girder for spans of moderate extent. This type is still very widely adopted, and has



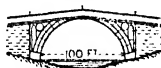
PLAUNEN



WITTENGEN

cast at Rotherham, and the project being abandoned the material was used for the arched B. of 236 ft. span across the R. Wear at Sunderland, finished in 1796. Southwark B. over the Thames, by Rennie, completed in 1819, has 3 spans, the largest being of 240 ft. It was later reconstructed in order to improve the road gradients. Cast-iron girders, a form of construction to resist transverse loads (as in timber beams) were first

of late years been favoured by Amer. engineers for spans up to 120 ft. Bs. having wrought-iron girders of triangulated form came into use in the middle of the last century, the first notable example being the Newark Dyke B. by Wild, 1852, of 259 ft. span, carrying 2 lines of railway. The top booms of these girders were made of cast iron, as also the struts, or members in compression, all the members, including the bottom boom, being of wrought iron.



COALBROOKDALE



SOUTHWARK

applied to a B. of 3 small spans by George Stephenson in 1823. By bolting together and trussing with wrought-iron rods, girder spans of cast iron were finally increased to 100 ft. In wrought-iron girder construction, having the material disposed with some regard to efficiency, the earliest known examples are due to William Handyside, who some years prior to 1847 had used such girders for buildings in St. Petersburg. In B. construction

This composite system of construction was soon abandoned in favour of all wrought iron for the girder work, though the simple triangulated design known as the Warren girder was much used, and is still occasionally chosen for moderate spans. In 1859 was constructed Brunel's great B. at Saltash, having 2 spans of 455 ft. The top boom is of hollow elliptical section, of cast iron, and arched from end to end. The bottom member of



BRITANNIA, MENAI STRAITS



SALTASH

the first serious use of wrought iron was by Fairbairn, for Vignolles, in 1847 in a railway B. of 60 ft. span. This B. had 3 built-up girders of box form, carrying a timber floor. Following this, in 1850, was completed the Britannia tubular B., having 4 spans, 2 of 460 ft., and 2 of 230 ft. each, the traffic passing through the 2 tubes, which lie side by side. The engineers responsible for the design were Robert Stephenson, Hodgkinson, and Fairbairn, assisted by Clark. This work, with the experimental investigations

reverse arched form is of wrought iron, the 2 being braced with vertical and diagonal members. The B. is still in use. Concurrently with the development of open web girders in this country there were being evolved in America various types of trusses, partly of iron, and partly of wood, later wholly of wrought iron, which, beginning with the Howe and Bollman trusses in 1840, were followed by the Pratt truss in 1844, the Fink truss in 1851, and by the Whipple in 1852. Of these the Whipple and the Pratt are still

largely used, perhaps the largest number of girder Bs. above 100 ft. span being of the last-named type. It is interesting to note that Palladio, about 1560, had proposed and perhaps used trusses, of course in timber, which closely resemble the



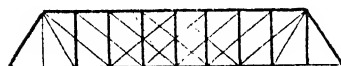
A



B



C



D



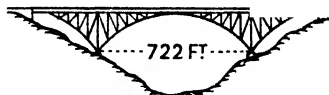
E

TRUSSES

A, Howe; B, Bollman; C, Fink; D, Whipple; E, Pratt.

Pratt type. In the accompanying diagrams indicating the forms of the various trusses, thin lines show members in tension, thick lines those in compression. The St. Louis municipal B. crossing the Mississippi has 3 spans each of 668 ft., carrying a double deck, with 2 railway lines and a road for vehicular traffic and

effected by the use of nickel steel in a great part of the trusses. The total cost of the 3 main spans, with the 4 supporting piers, was £410,000. The engineers responsible for the design were Messrs. Bolter and Hodge. From arches of cast iron already dealt with, to arches of wrought iron would seem but a step, yet it was not till 1864 that a wrought-iron arch B. of importance was constructed,



VIARUR

when there was built a B. of 3 spans crossing the Rhine at Coblenz, having openings of 315 ft. The ribs are of open-work design rising a part of their height above the road level. In 1874 was completed Capt. Ead's great B. over the Mississippi at St. Louis. This is of 3 spans, 502, 520, and 502 ft., the centre arch rising 47½ ft. The arches are formed of open triangulated ribs, supporting the roadway by vertical columns at the apices



NIAGARA

of the arch bracing. The general appearance is very fine. This is one of the earliest instances of the use of steel on large B. work, though for small Bs. it had been used in this country in 1861. Other Bs. of importance are the Douro viaduct by Sevrig of 525 ft. span, having crescent-shaped arches, hinged at the springing, the Viarur B., France, of 722 ft. span, having hinges at the crown and at the springing, and the Niagara Falls B., replacing in 1897 an earlier suspension B. The span of this arch, which is hinged



ST. LOUIS MUNICIPAL

passengers. The girders are 110 ft. deep at the centre, reduced towards the ends, having Pratt bracing, with subsidiary members. The piers are founded on caissons reaching rock at about 137 ft. below high-water level. The total weight of steel-work, including approaches, is 23,200 tons. In each of the girder spans complete there are 4250 tons of steel, exclusive of piers. Considerable saving was

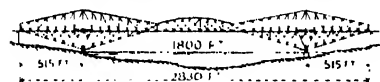
at the springings only, is 840 ft. The bridge between Norway and Sweden, which was completed in 1946, is the highest bridge in Europe, being 200 ft. above Svine Sund. It has a single span of 465 ft., and a total length of 1260 ft. Cantilever Bs., in which the structure of the B. is carried out from either side toward the middle of the opening, where the projecting ends are connected by an

intermediate girder span, were in a crude form known in very early times by the Chinese, being constructed in timber. Of modern examples may be mentioned the Sukkur B., over the R. Hoogly, 1889, of 820 ft. span, carrying a single line of railway, and the Forth B., completed in 1890 by Baker. This B. has 2 main spans of 1710 ft. each. There are 3 cantilevers, connected over the prin. openings by independent girder spans of 350 ft. The length from end to end of the cantilevered part of the B. is 5330 ft. The middle part of each complete cantilever rests at 4 points, those of the mid cantilever, which occurs at the is. of Inchgarvie,

longest suspension B. in the Brit. Empire. Its main span is 1500 ft. long. The Birkenough B. across the Sabl R., in S. Rhodesia, which was opened in 1935, is one of the longest single-span Bs. in the world; its single span arch is 280 ft. above the riv., and is 1080 ft. in length. In England the 531-ft. span of the new Tyne steel arch B. is the largest in the country. The clearance of 84 ft. allows full headroom for the type of ships using the riv., and the height to the top of the arch is 200 ft. The 4 chief types of Bs. for large spans, in which girder, arch, cantilever, or suspension principles appear, may be adopted for spans increasing in the order



being in the direction of the B.'s length 260 ft. apart. The arrangement is stable and convincing in appearance, and differs in this respect from the great B. over the St. Lawrence at Quebec, which is of cantilever form, having a centre span of 1800 ft., the cantilevers resting upon points, and deriving their whole stability from the land anchorages upon the shore. The Blackwell Is. B. by Ingersoll consists of 5 spans of cantilever construction; the second and fourth spans are of 1182 and 984 ft., the centre or is. span of 630 ft. being continuous from pier to pier and projecting to the centre of either riv. span, where it connects to the ends of the shore cantilevers. The end spans of



QUEBEC

about 640 ft. are the overhanging ends of the short arms. The soffit of the B. is sensibly straight, the top of the girders following indifferently well the moment curve proper to this form of construction. One of the most remarkable engineering feats in the construction of cantilever Bs. is the Sydney Harbour B., which was designed by Ralph Freeman and opened in Mar. 1932. It is the largest single-span arch B. in the world, its span being 1680 ft. in length. The top of the arch is 445 ft. above high-water level, while the roadway, which is suspended below the arch, is 170 ft. above the water level, and, being 150 ft. wide, can accommodate 6 lines of traffic, besides carrying 2 10-ft. pathways. The total length of this B. is 3816 ft., including approaches. The Lion's Gate B., across the entrance to Vancouver Harbour, which was opened by King George VI. during his visit to Canada in 1939, is said to be the

named. The choice of type is influenced greatly by considerations of economy, having regard to peculiarities of site. As types there is not a great deal to choose between them for spans from 300 to 700 ft. Beyond this the last 2 named are, with rare exceptions, used. For very large spans the disadvantages of the suspension B. begin to be less apparent, and if the anchorages are readily effected, that type may be the most economical. In any large B. the amount of moving or live load per foot run of B. has a greater influence on the question of economic type than the type itself on its merits as a type. *Opening Bs.*, in which a part of the structure is temporarily removed to leave a clear opening over water, or to make a break in the road for purposes of defence, are many hundred years old, and in the early form consisted of means provided to raise by chains a short length of B. floor. *Swing Bs.*, in which some part of the B. turns upon a pivot, the weight perhaps supported by rollers, are hardly more than a century old. This type is largely used, and has been applied to give a free opening of as much as 500 ft., as in the great swing span over the R. St. Lawrence, carrying 2 railroads, a trolley track, a carriage road, and footways. A swing B. carrying 234 ft. of the Bridgewater canal crosses the Manchester ship canal at Barton; this has openings on either side of the central pier of 90 ft. each. The weight of water carried is 760 tons, and the total turning weight 1350 tons. The ends are closed during turning by gates, and water-tight connection to the canal ends proper is made by a rubber-faced wedge device operated by hydraulic rams. In *Bascule Bs.* the moving portion turns vertically about a pivot, rising till the opening is left clear. The arrangement may be single-leaf or double, as in the case of the Tower B. over the Thames, which has a centre opening of 200 ft., with 2 leaves each of 100 ft. overhang to meet at the centre when down. In *Rolling Bs.*, of which the Schertzer variety

is best known, the opening part of the structure is formed with a rounded end suitably ballasted, upon which the opening part is caused to roll backwards till the span assumes an upright position, no longer obstructing the waterway. The heaviest opening B. of this kind, at Keadby in Yorkshire, is of 3000 tons weight. The heaviest swing B. in the world is believed to be the Sacramento double-deck B., which has a swing span of 390 ft. and is operated by 2 80-h.p. electric motors and, despite its great weight, can be opened or closed in 2½ min. In *Traverser Bs.* that part of the structure crossing the space to be occasionally freed is made to roll bodily backwards, telescoping within itself, with suitable mechanical arrangements to meet the difficulty presented by coincidence of road surface on the moving and the fixed portions of the B. A structure of this kind crosses the R. Dee. *Transporter Bs.*, of which many now exist, have an overhead arrangement of horizontal girders, or some form of stiffened suspension B., at a sufficient height to give the desired headway, with a platform suspended therefrom, which, accommodating vehicular and passenger loads, is drawn across from side to side. Of this kind the Runcorn transporter B. over the Mersey, constructed by Webster, has a clear opening of 1000 ft. Formerly Bs. used in military operations were constructed chiefly of timber, and were formed of plain or trussed beams, which may be supported by trestles. Cantilever and suspension types are used for larger spans, and for crossing wide rivs. are commonly of the floating description. The paramount condition is ability to erect quickly. During the last hundred years founding in water has received great attention; till then piling, where a riv-bed was soft or loose, was occasionally resorted to, or, to lay bare a portion of the bed, cofferdams were adopted. These were commonly made of double rows of piles, rendered watertight by clay puddle. Later, close piling, grooved and tongued, was used, particularly in cases where wide obstructions in the riv. were objectionable. Cylinder piers of iron or steel are frequently sunk by excavating in the interior, the bottom being open, by mechanical grabs working below water, or the cylinder being in clay, by pumping out the contained water and working in the dry. Where the strata are permeable the top of such a cylinder may be closed, and a lock having double doors being provided, the interior air is put under pressure just sufficient to exclude the water. This, the pneumatic method, is applied also to boxes or caissons of considerable size, a good example being the S. caisson sunk for the Quebec B., which goes down 110 ft. to solid rock. In the deep sands of Indian rivs., brick cylinders are much used for B. piers. These, being hollow, have strong steel curbs around the bottom edge, and sink by their own weight, assisted, it may be, by supplementary loading at the top. The enclosed sand is commonly removed

by grabs, and the interior finally filled with concrete. In America caissons are occasionally made of timber, or timber is used for what is known as crib work, in which massive constructions are framed together and loaded with stone to sink and form a solid base. The cost of B. piers in relation to the spans supported by them is important. The more costly it is to construct piers the greater should be the spacing between them, for economy. The object generally is to adopt such openings as will make the total cost a minimum. This is achieved when there is equality in the rate of variation due to span, of the cost of the piers and the cost of the superstructure, both reckoned at per ft. run of the B., and for girder Bs. is generally, but not of necessity, secured when the total cost of piers equals the total cost of the main girders.

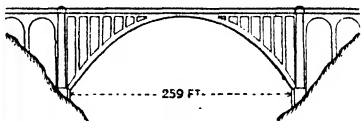
As regards methods of design, there is no information available as to how the engineers of anc. times developed the capacity to build so well as they did—by what reasoning they reached the forms and proportions adopted. What scientific knowledge they had was largely abstract in its nature, and though the state of the constructive arts indicates skill, the skill displayed is not so marked as to postulate advancement in any measure approaching that which now obtains. It is probable that in B.-building, as in other arts, much was learned by trial, and by failure. To conclude that the methods used were scientific in the sense now understood, because fine examples of work yet remain, would be to ignore the likelihood of many failures, failures as little foreseen as any certainty of success. Without knowledge of the computation of stresses, a knowledge of the resistance of materials to stress would be of little use, yet it is reasonable to think some principles of construction may have been perceived and applied in practice. As to the strength of solid beams, it is probable that the fact of a beam's strength increasing at a more rapid rate than the beam's depth simply, was known long since, though the precise laws governing this may have been unknown. It is an elementary fact to-day that a loose cord hanging between supports and loaded in a particular manner will assume a particular form, and that this corresponds to the form which must be given to an arched frame similarly loaded to ensure equilibrium—corresponds, in fact, to the form of an arch which shall be stable, and if of sufficient thickness, safe. Though the ability to calculate or lay out such a figure was probably wanting, yet the perception of a connection between a loaded cord and an arch ring similarly loaded may have been perceived, and applied by experiment to solve some of the problems occurring in arch and dome construction. It is inevitable that the nature and effects of tensile, compressive, and transverse stress should have been appreciated in some degree—the skill with which the Egyptians framed together articles of domestic use makes this apparent.

Coming to later times, but before the enunciation of any definite principles of statics, the nicety with which the Gothic builders adjusted resistance to thrust makes it probable enough that some method of reasoning or of experiment must have been applied, together with the exercise of judgment trained by constant use, at a time when routine methods of computation of any nicety were certainly wanting. The first evidence of any attempt to deal with questions of strength mathematically is found in the effort of Galileo in 1638 to formulate the laws governing the transverse strength of rectangular beams. He reached the conclusion that this varied as the breadth, and as the square of the depth, and though right to this extent, fell into error in assuming rigidity of material up to the point of rupture, which was thought to occur by yielding to tension from the top edge of the beam downward, placing the neutral axis, as now termed, at the top of the section. It is most likely that Galileo understood that this was not strictly true, but stated his proposition as a first rough approximation to the truth. The law of proportionality between stress and strain, i.e. between force applied and yield resulting, was discovered by Hooke in 1660, and pub. 1678. This, the great fundamental principle upon which all modern design may be said to rest, was not at first fully appreciated. Mariotte, resorting to experiment, estab. that beams under transverse load were subject to compressive stress in the upper part, and tensile stress in the lower, and perceiving that there must be some part between the upper and lower surfaces at which change of stress would occur, arbitrarily assigned this to the centre of gravity of the section, in which he happened to be right. Jacques Bernoulli (Swiss mathematician, 1654-1705) studying the flexure of beams between 1694 and 1705, was the first to construct what are known as stress-strain curves, a graphic method of displaying the relationship of stress to strain, but was not wholly correct in his conclusions. Parent in 1713 perceived that in any beam the total stress above the neutral axis must equal that of contrary kind below, fixed the position of the neutral axis as being coincident with the centre of gravity of the section, and showed that stress varied uniformly from the neutral axis outwards. Coulomb in 1773 reannounced Parent's conclusions, it is supposed with no previous knowledge of those conclusions. Finally, Saint-Venant gave a complete mathematical analysis of beam phenomena as now understood. The determination of stresses in framed and other structures began, it may be said, with the discovery by Galileo of the funicular curve, which has already been referred to as a curve of equilibrium in connection with arch structures, but the studies of investigators were for fully 100 years from Galileo's time confined chiefly to the determination of the loading proper to particular curves, finding in this scope for mathematical analysis of a

high order. Parent, towards the end of the seventeenth century, ascertained the precise loading necessary to simple stability of the semicircular figure, and defined the catenary curve. These studies were supposed to have a bearing upon the correct design of arches, but being pushed to theoretical extremes, with little regard to actual conditions of thick arch construction, were of little value. More practical investigations into the theory of arches were later pursued by La Hire, Coulomb, and Moseley. The resolution of forces has been known as a simple theorem from the time of Galileo, to whom it is due, but Whipple was perhaps the first, in 1846, correctly to analyse the stresses in a truss. The first really convenient application of known principles was by Clerk Maxwell, who estab. in 1864 the method of reciprocal figures by which, given the form of a frame (with certain limitations) and the direction and amount of the forces acting upon it, a diagram may be drawn to a definite scale, which gives, by the length of its lines, the amounts of the stresses in the frame; this, with a simple system of lettering the parts for ready identification, due to Bow, renders a graphic solution a comparatively simple matter in cases where the stresses are determinate by static principles. The stresses in a frame may, with the same reservation, be determined by an application of the principle of the lever, and by other methods. Difficulties arise in cases where the frame is not statically determinate, where a girder in one length rests upon more than 2 supports, and in elastic arches with less than 3 hinges. Various methods are in use for dealing with questions of this character. Without some simplification of the conditions really obtaining, calculations of this kind are apt to be involved or impracticable, and the tendency is to avoid methods of construction which render such computations necessary, with the lasting disadvantage of possible injury resulting from displacement of foundations. On the other hand, in the case of arches, the disuse of hinged bearings at the springings and at the crown is favourable to general stiffness of the structure. It has been said that the determination of stresses in the members of a structure would be valueless without some knowledge of the behaviour of materials under stress. The earliest experiments in this direction were crude and unreliable, but tests of value were made by Tredgold, Barlow, Fairbairn, Hodgkinson, and others; the whole study is barely 100 years old. In recent years experimental work, continued to destruction, has been carried out upon materials as such, and upon the parts of structures, particularly strut members and riveted joints, and upon structures to a large scale. Tests of the elastic deformation of parts of Bs. have also been made, with a view to ascertain what difference there may be between the observed and the calculated result. The assumption in calculating girders having riveted connections, that the connection is as though

hinged, is not satisfactory, and though leading to but little error in frames having slender members, results in uncertainty as to the nature and amount of the stresses at the connections, and in the members of a frame, where these are of exceptional breadth. This, though not satisfactory, does not appear in practice to lead to inconvenience. It is probable that in wrought iron, and more so in steel, any considerable secondary stress which may be developed when the structure is new is in course of time modified by yield of the parts, the ultimate condition of the metal under strain or deformation which is not progressive being in no sense prejudiced. The effects of variation and reversal of stress in structural materials have been studied, notably by Wohler and Bauschinger, with the broad result for steel that resistances to stress of constant amount—to stress varying between zero and a maximum of one kind (tension or compression)—and to stress varying between maxima of differing kinds, are proportional to 3, 2, and 1. Attention has also been given to the effects of impact, which is now commonly covered by percentage allowances added to the known live loads, these allowances being based upon experience and judgment. As the span of Bs. increases, the weight of that part of the structure devoted to carrying the load from side to side increases at a somewhat rapid rate. For small structures, the weight of supporting girders, for instance, may be little compared with the load supported, but in the case of large spans the structure itself may greatly exceed the weight of the load carried. The cost rises for large spans even more rapidly. The design of small Bs. is a simple matter, the practice in such structures is so well understood as to give no special trouble, but the labour involved in works of magnitude or of exceptional difficulty may be extreme. To illustrate this, particulars relating to the Forth B. are to the point. The work of design and detailing covered about 9 years, part of this being concurrent with the progress of the work. The staff of engineers and draughtsmen employed appears to have been about 20, and the cost, exclusive of chief engineer's fees, about £28,000, with rents and general office charges additional: this corresponds to about 10s. per ton of steelwork in the structure. In more recent years there has become available for B. construction the composite material, reinforced concrete, in which bars either round or of special section are used in combination with concrete of exceptional density and strength, the chief function of the steel being to resist tensile stresses and of the concrete to offer resistance to compression. Solid beam Bs. in this material are now used in America, and arches of considerable size. The Stein Teufen B., Switzerland, with a span of 259 ft., may be named as a fine example, and the Sergolomento B. in Rome, of 328 ft. span, as one of the largest yet built in this way. In France girders of the Pratt and bowstring type have also been constructed,

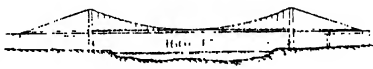
but for Bs. in this country it finds little favour, though occasionally used for highway purposes, in which, as a rule, heavy and quick-moving loads are infrequent. For railway Bs. some doubt exists as to whether the vibration caused by heavy locomotives may not reduce the grip of the concrete upon the steel, which if it occurs would be serious, but there appears no evidence of this in reinforced concrete structures designed with liberal margins, and if this apprehension is not justified, this material would be economical in



STEIN TEUFEN BRIDGE, SWITZERLAND

maintenance, as in first cost. It is not, however, in railway work, adaptable to alterations or reconstruction, such as is frequently necessary with growth of traffic, or for other reasons, as no reinforced concrete structure is fit to carry its full load till many weeks after being built. In designing (1948) the proposed B. over the R. Severn, England, attention was given to the effect of wind on the roadway, as stiffening of the roadway with solid girders running the whole length is considered to be the cause of disaster to many Bs. Tests pointed to the value of using open-lattice girders, which gave stability in gales up to 90 m.p.h. The world's first aluminium alloy B., with a span of 121 ft., was opened at Sunderland in 1948.

The United States. The oldest wooden bridge was the 'Great Bridge,' Boston, built in 1662, but the first noteworthy bridge was Roebling's suspension over Niagara R. in 1855, span 821 ft. In 1870 he designed Brooklyn bridge, span 1595 ft. between stone towers 280 ft. above



WILLIAMSBURG BRIDGE

water. Two other suspension R. over E. Riv., New York, were built 20 years later—Williamsburg in 1904 (1600 ft.) and Manhattan in 1909 (1470 ft.). Cantilever construction began in 1876 and the Queensborough bridge, New York, completed 1909, has span of 1182 ft. The first metal arch was Eads's bridge at St. Louis, 1873, and in 1912 the railway bridge, Hell Gate arch, over E. R., was started. The Sciotoville bridge over the Ohio, 2 spans of 775 ft., is a foremost achievement in continuous bridge construction. Growth of motor traffic caused the construction of sev. important highway Bs.—in 1920 2 Chicago bascule Bs., double-decked; in 1922 Ironton bridge, Ohio, span 1425 ft.; and in 1924 Bear Mt. bridge, Hudson R., span 1632

ft. The great highway bridge from Philadelphia to Camden over Delaware R., designed by Modjeski, was completed in 1926. Length between anchorages is 2253 ft. and main span 1750 ft. Two suspension cables were used, each 30 in. diameter, consisting of 18,666 wire strands. Main towers rise 385 ft. above water. 1927 saw the opening of 2 important B.—in May the cantilever bridge over the Carquinez Straits, California, and in Aug. the International Peace bridge between Buffalo, U.S.A., and Fort Erie, Canada. In 1927 also 3 B. were put under construction to connect Staten Is. to the mainland. The Outer-bridge crossing, named after the first chairman of the port authority, from Perth Amboy, New Jersey, to Tottenville, Staten Is., is a high-level cantilever structure over Arthur Kill, being 135 ft. above water as the Kills are navigable. Central span is 750 ft., and total length, including approaches, 10,200 ft. The other cantilever bridge stretches from Elizabeth, New Jersey, to Howland Hook, Staten Is., with a centre channel span of 672 ft. The steel arch bridge from Bayonne, New Jersey, to Staten Is. crosses the Kill-van-Kull with a single 1650-ft. span. A 4-lane roadway with provision for the addition of 2 more lanes is suspended from this arch. The Grand Canyon, Colorado R., was spanned by an arch, and for the Memorial bridge over Potomac R., Washington, the architectural designs have been drawn up. In 1928 and 1929 sev. large suspension B. were completed—Streubenville bridge, Ohio, 689 ft. span; Ambassador's bridge, Detroit, 1850 ft. span; Mid-Hudson bridge, Poughkeepsie, 1500 ft. span; and Mt. Hope bridge, Rhode Is., 1200 ft. span. In size these B. have been superseded by the great Hudson R. bridge from New York City to New Jersey. This bridge crosses the Hudson with a central span of 3500 ft., the weight of the suspended structure being 120,000 tons. This is the most striking modern Amer. bridge, with its steel towers 635 ft. above high water and a clearance of 213 ft. above high water at the centre so that the largest ocean-going ships can at all times pass beneath with their masts standing up. The essential object in the design of this bridge was to allow of enlargement after the initial opening, so as to meet ever-changing conditions. Thus, though the floor has 2 decks the lower will probably not be in use for some years. The upper has a centre roadway 40 ft. wide, to carry 4 lines of heavy traffic, and outside roadways 24 ft. wide, and 2 footpaths 11½ ft. wide. The towers, massive so as to express their function of supporting the tremendous weight of the suspended span, are each 210 ft. wide and 65 ft. long at the base. The engineer responsible for the Hudson R. bridge is O. H. Ammann, formerly chief assistant to Gustav Lindenthal, who built the Hell Gate arch. The Huey Long bridge across the Mississippi, the latest of that riv.'s 29 major B., is 4½ m. in length, including its approaches, and is numbered among the

world's greatest B. It was opened on Dec. 16, 1935. Its central cantilever span has a total length of 790 ft. from pier to pier, of which 500 ft. comprise a suspended span supported by cantilever arm. A new bridge, over 8 m. long, begun in 1935, connects San Francisco with its suburb Oakland. Ships of any tonnage can pass under it. A still more striking bridge is the new suspension bridge across the Golden Gate, San Francisco. Its central span is 4200 ft. long, with 2 side spans of 1100 ft. each, giving a clearance of 225 ft., with towers 760 ft. high. The bridge across the Grand Canyon, in Arizona, completed in 1929, is notable for having the highest steel arch of any bridge in the world; the floor is 475 ft. above the water level and the span of the bridge is 616 ft. See also BRIDGING, MILITARY.

See H. H. Bird, *Practical Design of Plate Girder Bridges*, 1920; D. B. Steinmann, *Suspension Bridges*, 1922; W. J. M. Rankine, *Civil Engineering*, 1926; W. L. Scott, *Reinforced Concrete Bridges*, 1931; C. E. Inglis, *Vibration in Railway Bridges*, 1934; A. Morley, *Theory of Structures*, 1934; C. A. Claremont, *Spanning Space*, 1939; H. P. Philpot, *Lattice Girder Bridge*, 1939; A. C. Hayden, *The Rigid Frame Bridge*, 1940; G. A. Hool and W. S. Kinne, *Movable and Long-Span Steel Bridges*, 1943; Min. of Transport, *Memorandum on Bridge Design and Construction*, 1945; J. Illusband and W. Harby, *Structural Engineering*, 1947.

Bridge, a card game developed from whist and introduced about 1894. The cards are dealt as in whist, except that the last card is not exposed. The dealer has the privilege of declaring what suit constitutes trumps, and he is influenced by the different scoring values of the various suits. Spades count 2 points for every trick above 6, clubs 4 points, diamonds 6 points, hearts 8 points, and no trumps 12 points. After considering his own hand, the dealer may leave the duty of declaring trumps to his partner, but no further communication than the bare words 'I leave it' is allowed. When trumps have been called, the 'leader,' or opponent on the left of the dealer, may 'double' the value of each trick, or, following him, the third player may exercise that right. In case of a double, the dealer or his partner may 'redouble,' which means that the value of a trick is quadrupled. This again may be doubled, and so on until a maximum of 100 points a trick is reached. After the leader has played his first card, the second player, or 'dummy,' lays his hand face upwards on the table and takes no further part in actual play, the dealer playing both hands. Otherwise play proceeds as in whist. The scoring is recorded on paper ruled with 2 vertical columns crossed by a horizontal line about half way. The values of tricks above 6 are scored below the line to either side, while above the line are scored honours, chicane, and points for grand and little slam. The honours consist of ace, king, queen, knave, and 10 of the trump suit, and for

3 or 'simple' honours a side scores the value of 2 tricks; for 4 honours, 4 tricks; for 5 honours, 5 tricks; for 4 honours in 1 hand, 8 tricks; for 5 honours, 4 in 1 hand, 9 tricks; for 5 honours in 1 hand, 10 tricks. In no trumps, aces are counted as honours, 3 counting 30 points, 4 counting 40 points, and 4 in 1 hand 100 points. 'Chicane' means the absence in 1 hand of any trump cards; the side possessing the hand scores points equivalent to simple honours. If all the tricks are taken, 'grand slam' is recorded, counting 40 points; if all but 1 are taken, 20 points are scored for 'little slam.' A game is concluded when 1 side completes 30 points below the line, and a fresh game starts. The first side to win 2 games is awarded the rubber, for which 100 points are scored in the honour column. The total score is arrived at by adding all points above and below the line.

Three-handed B.—When 3 persons play, 4 hands are dealt, the dealer playing his own and dummy's. If the dealer 'leaves' the declaration, the trump is determined by the constitution of dummy's hand. If there are 3 aces, 'no trumps' must be called, otherwise the longest suit constitutes trumps. If 2 suits are of equal length, the pips are counted, ace counting 11 and other honours 10 each. If 2 suits are still equal, the suit of higher scoring value becomes the trump suit. Only declarations which are won are scored below the line, the opponents score above the line if the declaration is lost, together with honours, etc., as in ordinary B. 50 points are scored in honours for each game, and 50 more for the rubber. *See also* AUCTION BRIDGE; CONTRACT BRIDGE.

Bridge, Sir Cyprian Arthur George (1839-1924), Brit. admiral, *b.* at St. John's, Newfoundland. He entered the Navy in 1853, and became rear-admiral in 1892. On his retirement, in 1904, was commander-in-chief of the China station. He served on various committees; on explosives, ordnance, etc.; also, on the commission on the North Sea incident of 1904, and on the commission to inquire into the campaign in Mesopotamia, 1916.

Bridge, Sir John Frederick (1844-1924), Eng. musician, *b.* at Oldbury, Worcestershire. When about 14 years of age, he was articled to John Hopkins, organist of Rochester Cathedral, where his father held a lay clerkship. He was organist of Trinity Church, Windsor, 1865-69, and of Manchester Cathedral 1869-75. As organist at Westminster Abbey from 1875, he officiated on many important occasions, notably at Queen Victoria's jubilee services, and at the coronation of King Edward VII. and of King George V. He was knighted at Queen Victoria's diamond jubilee in 1897. He was King Edward prof. at London Univ. from its foundation 1902; and he pub. sev. cantatas, oratorios, and works on the theory of music, in addition to publishing and editing a considerable amount of church music. He pub. a record of service, entitled *A Westminster Pilgrim*, in 1919; *Twelve Good Musicians*, 1920; *The Old Cries of*

London, 1921; *Shakespearean Music*, 1923 (Dent); *d.* at the Cloisters, Westminster Abbey, Mar. 18.

Bridge-head, in fortification, is a building intended to cover the passage across a riv. by means of fortifications on one or both banks. Should an army require to pass over a bridge, it is very necessary to protect it from an attack by the enemy, as its passage must necessarily be slow and difficult: the works of the B. must therefore be strong enough to ensure the bridge against harm by hostile firing. In earlier times, when only short-range weapons were in use, the B. formed a protection for the bridge only, but modern times and conditions have made it needful to construct far stronger bridge-defences.

Bridgeman of Leigh, William Clive B., first Viscount (1864-1935); only son of Rev. John Robert Orlando B., third son of second earl of Bradford (Salop), and rector of Weston-under-Lizard, Staffordshire. Educated at Eton and Cambridge. Assistant private secretary to Lord Knutsford (colonial secretary) 1889-92, and to Sir Michael Hicks-Beach 1895-97. Represented Oswestry div. of Shropshire in parliament 1906-29. In Coalition Gov. was junior lord of treasury and parl. secretary in various depts. Privy Councillor 1920, home secretary in Conservative Govs., 1922-24. His deportation of Art O'Brien, 1923, was declared illegal by court of appeal, and necessitated an Act of Indemnity. On Conservatives' return to power, Nov. 1924, he became first lord of the Admiralty, and was active in developing the project for the Singapore naval base. Created viscount in 1929.

Bridgend, tn. in Glamorganshire, Wales, on the R. Ogmore, 14½ m. S.E. of Neath. It has various small industries, including ironworks, coal mines, stone quarries, a tannery, etc. Pop. 10,000.

Bridgenorth, *see* BRIDGNORTH.

Bridge of Allan, a watering-place on the R. Allan, Stirlingshire, with the chief saline waters in Scotland. A meeting for Scottish athletic games is held annually and there are large cotton manufacturing works and a paper manufactory. Pop. of burgh, 3200.

Bridge of Sighs. The name given to the covered way leading from the ducal palace to the State prison in Venice. The name owes its origin to the fact that it was over this way that offenders under sentence of death were conducted to their fate.

Bridge of Weir, mrkt. tn. in W. Renfrewshire, Scotland, 6 m. to the W. of Paisley. Pop. 2500.

Bridgeport, seaport and city of Fairfield co., Connecticut, U.S.A. It is situated on Long Is. Sound, and is about 60 m. N.E. from New York. It has a considerable coasting trade, and a safe harbour for small vessels. The manufs. are sewing machines, machinery, iron and bronze goods, arms, railway wagons, electrical apparatus, and rubber goods. Pop. 147,000.

Bridges, Sir George Tom Molesworth (1871-1939), Brit. soldier. Artillery sub-

altern in 1892, reached the rank of major-general in 1917 and of lieutenant-general in 1922. In the First World War he commanded the 19th Div., head of military missions with Belgian Army, and to U.S.A. Governor of S. Australia, 1922-27. K.C.B., 1925.

Bridges, Robert Seymour (1844-1930), Eng. poet, was educated at Eton, Corpus Christi College, Oxford, and later was a medical student at St. Bartholomew's, London. For some time assistant physician at the Children's Hospital, Great Ormond Street, he afterwards was on the staff at the Great N. Hospital. Having ample private means, he retired from practice in 1882 to devote himself to literature. His knowledge of medicine and contact with suffering humanity undoubtedly account for the deep and subtle insight into the well-springs of human nature which characterises so much of his work, particularly in poems on the mystery of the body and the miraculous spirit of man. Occasionally, too, as in his classical hexameters, he expressly belauds the achievements of medicine, for example, in the person of Pasteur, against mankind's 'microscopic foes.' In 1894 he married Monica, daughter of Alfred Waterhouse, R.A., a love match which is often reflected in many of his earliest as well as latest love poems. In 1913, when he was appointed poet laureate in succession to Alfred Austin, many described him as an academic poet; but though he shunned publicity, his muse is not remote from human concerns, and if his poetry will never be 'popular,' it often approaches the authentic in ecstasy and tenderness. His finished artistry, which mitigates the somewhat unmusical note of his more experimental quantitative hexameters and elegiacs, and deft workmanship, combined with real fervour, give him an unassailable place among our national poets as the link between the older and younger schools of Eng. lyrical poets. If, in his exploratory work, as in his efforts to reproduce O.F. versification, he is inferior to both Henley and Andrew Lang, his reputation does not rest on these and similar poetic tourneys, even though they aided him to acquire a complete mastery of Eng. prosody. His finest work and that which most evidences his craftsmanship, is, perhaps, to be found in such poems as *Eros and Psyche*, his version of the love story of Apuleius, and in many of his sonnets. Other notable works are *Demeter: a Masque*; *The Spirit of Man* (an anthology in wartime); and *Prometheus, the Firegiver*. In prose, his essays on Milton's prosody and on Keats put him not far below Matthew Arnold, while he eschews the pessimism of the earlier critic. In the same period of his highest activity, between 1885 and 1916, he also produced some 8 plays, all of the order of closet drama; and some loyal poems of the type of *Britannia Victrix*. The plays include a tragedy, *Nero*, written in 1885, and *The Return of Ulysses*, 1890; and a comedy, *The Humours of the Court*, in which he

modelled himself on Calderon. In 1914 he produced a privately printed ed. of poems, entitled *October and other Poems*, which with some 18 war poems were pub. in 1920. In 1916 he pub. *The Spirit of Man*, a collection of prose and verse extracts from many writers, designed to bring fortitude and peace of mind to his countrymen in the dark days of the war. Another anthology, *The Chiswell Book of Poetry*, for use in schools, was pub. in 1924. Many of the best pieces in it—in a style which B. describes as 'New Miltonic'—are full of beauty and humour, often rich in philosophic suggestion. They would seem almost to be by way of preliminary to the method he afterwards employed in his final masterpiece. Included in the output of his later prose were a *Memoir of Henry Bradley* of the Oxford Dictionary, essays on Shakespeare's dramas, *Free Verse*, *Keats and Poetic Diction*. His care for Eng. pronunciation led to his becoming an adviser to the B.B.C. on the subject. He was also the founder and general editor of a series of studies in the Eng. language known as the S.P.E. Tracts. It was at the age of 85 that he pub. his great poem, *The Testament of Beauty*, which has been well described as a personal synthesis to the making of which had gone all the scientific, artistic, philosophical, and religious energies of a great nature. It was in the year of the publication of this poem, 1929, that he received the O.M. See Arthur Symonds, *Studies in Prose and Verse*, 1904; Edward Thompson, *Robert Bridges*, 1944.

Bridges, Sir William Throsby (1861-1915), Brit. general, b. at Greenock. Educated at Ryde, Isle of Wight; Royal Naval School, Greenwich; then—his parents having removed to Canada—at Trinity College School, Port Hope, Ontario; and at the Canadian Military College, Kingston. His parents having again removed, he followed them to New S. Wales and obtained a position in the Gov. Roads and Bridges dept. Became lieutenant in New S. Wales permanent artillery, 1885. Served in S. Africa, 1899-1900; Acting Q.M.G. headquarters Commonwealth military forces, 1902; chief of intelligence, 1905; chief of general staff, 1909; and from 1910 till 1914 commandant Royal Military College, Duntroon—which he had founded. During the First World War he was with the first Australian contingent as major-general; and, while commanding the first Australian div. at Gallipoli, he was mortally wounded May 15. He d. at sea on the 20th.

Bridget, St., of Sweden (c. 1302-73). Rom. Catholic saint, was the daughter of Birger Persson, governor of Uppland, and of the blood-royal of Sweden. She was married to Ulf Gudmarson at the age of 14, and 8 children were b. of the marriage. In 1341 she set out with her husband on a pilgrimage to the shrine of St. James of Compostella in Spain. She founded the order of St. B. or St. Salvador, which quickly spread its influence throughout Europe. At Chudleigh is the famous Brigittine nunnery of Syon House. St. B.

was canonised in 1391, her feast being Oct. 9. She is chiefly remembered on account of her visions, which were trans. into Lat. by her confessors.

Bridget, St., of Ireland, *see* BRIGIT, ST. **Bridgeton,** city and co. seat of Cumberland co., New Jersey, U.S.A. It is a port built on Cohansey Creek, about 40 m. from Philadelphia. There is considerable trade in glass bottles, and there are large iron foundries. Pop. 13,300.

Bridgetown, the cap. of Barbados, with a variegated pop. of 15,000. George Washington visited it in 1751, and the Dutch Adm. de Ruyter attacked it in 1665 for 5 hrs. in vain. B. is a well-built tn. with wide streets and good shops and villas lost in ample gardens. It has a cathedral, Codrington College, barracks, and an arsenal, and exports sugar and molasses.

Bridgewater, small tn. of Plymouth co., Massachusetts, U.S.A., situated on the New York, New Haven, and Hartford R., 27 m. S. of Boston. It has manufs. of cotton, iron, paper, shoes, nails, etc.: also foundries and machine shops. Pop. 9000.

Bridgewater, Francis Egerton, third Duke of (1736-1803), who introduced inland navigation in England, was b. on May 21. During his young days he became engaged to the duchess of Hamilton, but the match was broken off. This caused his retirement from society, and he estab. a house in the country, where he studied the possibilities of canal traffic. He designed the canal from Worsley to Manchester so that it might be utilised for the transport of coal from his Worsley estate. A remarkable aqueduct across the Irwell is a feature of the great achievement. With the aid of his engineer, James Brindley, he projected the canal connecting Liverpool and Manchester. This was begun in 1762, and manifold and formidable obstacles had to be surmounted. The canals were sold to the B. Navigation Company in 1872, and in 1887 were sold to the Manchester Ship Canal Company.

Bridgewater, Francis Henry Egerton, eighth Earl of (1756-1829), son of John Egerton, bishop of Durham, was b. on Nov. 11. He was educated at Eton and Oxford. He studied for the Church, and was rector of Middle and Whitechurch, in Shropshire. He succeeded his brother to the title in 1823, but remained unmarried, and at his death the title became extinct. The Egerton MSS. (on the literature of France and Italy) were bequeathed by him to the Brit. Museum along with a sum of £12,000. He also left £8000 to be paid to the author of the best treatise 'On the Power, Wisdom, and Goodness of God, as manifested in the Creation.' The president of the Royal Society (Davies Gilbert), in whose hands lay the decision of the merits of the works, divided the money among 8 persons for 8 separate treatises. These are the celebrated R. Treatises. The list of the works is as follows: (1) *The Adaptation of External Nature to the Moral and Intellectual Constitution of Man*, by Thomas

Chalmers, D.D., 1833; (2) *Chemistry, Meteorology, and Digestion*, by William Prout, M.D., 1834; (3) *History, Habits, and Instincts of Animals*, by William Kirby, 1835; (4) *Geology and Mineralogy*, by Dean Buckland, 1837; (5) *The Hand, as evincing Design*, by Sir Charles Bell, 1837; (6) *The Adaptation of External Nature to the Physical Condition of Man*, by John Kidd, M.D., 1837; (7) *Astronomy and General Physics*, by William Whewell, D.D., 1839; (8) *Animal and Vegetable Physiology*, by Peter Mark Roget, M.D., 1840.

Bridgewater, John (c. 1532 - c. 1596). Catholic divine, sometimes called by the Latinised form of his name, Aquepontanus. Graduated M.A. at Oxford, 1556, and appointed rector of Lincoln College at that univ., 1563-74. After serving as canon residentiary of Wells, the earl of Leicester, Robert Dudley, appointed him as his domestic chaplain. He pub. a number of historical and theological works in Lat.

Bridgewater Canal, one of the first Eng. canals to be constructed, was built by the order and at the expense of the duke of B., for the purpose at first of having coals conveyed from Worsley to Manchester. It was later on extended to the Mersey. *See* BRIDGEWATER, DUKE OF.

Bridging, Military. Before the introduction of heavy armament light bridges of wood, rope, basket-work, etc., sufficed, while various types of rafts and flat-bottomed boats were used for the transport of horses and wagons. During a campaign material may have to be carried considerable distances, a consideration which affects choice of materials. Before the First World War military bridges were constructed almost entirely of wood, but owing to the development of heavy field artillery during the present century, combined with the invention and use of tanks and of mechanical transport generally, the use of iron and steel became necessary. The demolition of bridges is one of the most effective means of delaying the enemy or denying to him the use of certain lines of approach or of restricting his activities to a certain area. At the beginning of the First World War the lack of heavy B. material was felt acutely by the Brit. Army when crossing the R. Aisne. Steel spans were, however, soon sent to France from England. As the war progressed lifting bridges for use on canals, and barge-bridges, were also constructed; the latter were useful in spanning 60-ft. gaps, the barge being turned in the required direction. The successful Ger. advance in the spring of 1918 caused many bridges to be built on the new front, in which a number of rolled-steel joist spans were erected over sev. small streams about St. Omer. Much B. work was carried out during this period by the Amer. engineers in the Amiens area. In Aug. 1918 the Australian pioneers also distinguished themselves by erecting 2 high-level bridges at Chipilly. The Amers. generally adopted the Brit. type of bridge, and produced a

pattern with a 60-ft. span in which the cross girders and flooring were raised to allow the sponsons of tanks to ride over the girders.

D. O. Bailey, a Brit. engineer, gave his name to a bridge which was of the utmost value to the Brit. and Amer. armies in the Second World War, and became a standard method of bridge construction. The bridge, which is of steel, provides an equipment which can be assembled rapidly by hand in various ways in order to meet varying requirements of span and load. The roadway of timber planking is carried between 2 main girders. These girders are formed of steel lattice 'panels,' each 10 ft. long by 5 ft. 1 in. high, pinned together with alloy steel pins. The panels are designed to be handled by 6 men, and the bridge is normally built on rollers and pushed out across the gap as each set of panels with cross members and stiffening pieces is assembled. The strength of the main girders is varied by adding extra panels alongside the first and/or by adding extra storeys above. The bridge can be constructed to carry all military loads. A single span can extend over a gap of up to 250 ft. The equipment is also designed for use with pontoons as a floating bridge. See also **ENGINEERING, MILITARY**.

Bridgeman, Laura (1829-89), an Amer. blind deaf-mute, b. at Hanover, New Hampshire. Up to the age of 2 the child was organically normal, but she caught a severe fever, which utterly destroyed her senses of hearing and seeing, and seriously impaired her nervous system. At the age of 8, through the influence of Dr. Howe, she was admitted into the Perkins Institution for the Blind. At first her intellect could only be reached through arbitrary signs, but gradually she mastered the art of reading in embossed type, and thenceforth made extraordinary progress. She subsequently learned advanced algebra, geography, and elementary astronomy. She was of a very religious temperament, and wrote sev. little hymns. She was the first blind deaf-mute for whom a systematic education was successful. Charles Dickens met her, and gives an account of her education in his *American Notes*, Chap. III.

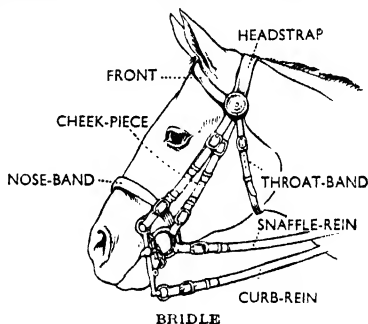
Bridgnorth, tn. and municipal bor. of Shropshire, England, situated on the banks of the Severn, which divides it into the High and Low tns., It has a large market., an anct. tn. hall, a library, and a prison. It manufs. nails and worsted, and does much trade by the Severn. Pop. 5000.

Bridgwater, a seaport tn. in Somersetshire, England, about 30 m. from Bristol. The R. Parret flows through the middle of the tn., and is spanned by a fine iron bridge. The manuf. of bath brick is an important industry, B. being the only place where it is made, the materials for which are obtained from the riv.-bed. There are also a few potteries. The exports are earthenware, bath brick, cement; and the imports are coal, timber, grain, etc. Pop. 17,500.

Bridie, James, pseudonym of Osborne

Henry Mavor, Scottish dramatist, b. at Glasgow, Jan. 3, 1888. Educated Glasgow Academy and univ. of Glasgow. He entered the medical profession, and was honorary consulting physician to the Victoria Infirmary, Glasgow, and prof. of medicine in the Anderson College, Glasgow. His first play to be produced in London was *The Anatomist* (1931), followed by 2 other plays which further estab. his reputation as an original and entertaining playwright, *Tobias and the Angel* (1931) and *Jonah and the Whale* (1932). He has written a number of other plays, the majority of which have been pub. in addition to production. B. is a member of the council of the League of Brit. Dramatists, and has taken an active part in the revival of Scottish drama.

Bridle, that portion of the harness of a horse by means of which its direction is governed and its speed regulated. It is attached to the head and mouth. The



ordinary single riding B. consists of a system of straps, one passing over the head, behind the ears, called the headstrap; another, the front strap, in front of the ears, and horizontally placed and joining the head-strap at each end; other portions include a cheek-piece, throat-band, nose-band, and the reins, all of which are explained by the names they bear. The driving B. has usually a pair of blinkers fixed to the cheek-pieces in order to restrict the vision of the horse, for its tendency to see objects approaching from the rear often leads to fright. Another variety of the B. is the double or Weymouth B., and is generally used in hunting, though its use in ordinary driving is increasing. It has 2 separate bits, and is to be recognised by its chain curb, which gives additional powers of control. A modification of this double B. is the Pelham. It consists of a single bit with an additional pair of rings fixed to the sides. Improvements regarding the appearance of the horse and also its physical comfort have seldom happily been made to achieve both ends. The bearing-rein, fastening to the saddle-pad and thence to the bit, has the effect of arching the animal's neck and thereby considerably improving its appearance. but the

physical discomfort entailed by the device is claimed by the opponents of the bearing rein to render its application wilful torture. The modern bit, called a snaffle bit, consists of a smooth rounded iron, jointed in the centre, and terminating in bars as a preventive against the bit being pulled out of the mouth, and it is noteworthy that it corresponds in structure almost exactly with the Assyrian device.

Bridlington, municipal bor. in the E. Riding of Yorkshire, England, situated about a m. from the coast, where is B. Quay, the port for the tn. It is 6 m. from Flamborough Head, and is a quaint irregularly built tn. The bay is a fashionable watering-place, noted for its mineral springs, firm sands, and chalk flint fossils. There is plentiful accommodation for small vessels in the harbour, and a good trade in corn is carried on. The Royal Hall was opened in 1926. Queen Henrietta Maria's lodgings were cannonaded here in 1643 by Adm. Batten and shots from an Amer. squadron reached the shore in 1779. Pop. 20,000.

Bridport, port in Dorsetshire, England, situated between the 2 streams Bride and Asker. Near the tn. these rivs. join and form the Brit, which is a safe and roomy harbour for smaller vessels. The manufs. are thread and twine, sail-cloth, and nets. A hospital was built in 1915. W. Bay, formerly called B. Harbour, is a favourite seaside resort. Pop. 6000.

Bridport, Sir Alexander Hood, first Viscount (1727-1814), Eng. admiral. Son of a clergyman and brother of Viscount Hood of Whitley (q.v.). He entered the Navy in 1741, and served as lieutenant for 10 years on a number of ships. Whilst on the *Minerva* frigate he was at Quiberon Bay when Hawke gained his famous victory, 1759. In 1778, on the *Robust*, he took part in the battle of Ushant. The court-martial of Adm. Keppel resulted from this engagement. Hood, by his defence of Keppel, roused considerable animosity. As commander of a flag-ship under Howe, he was present at the relief of Gibraltar in 1782. When war was declared with France in 1793, he distinguished himself, especially in the action known as the 'Glorious First of June,' as second in command to Howe, and was consequently raised to the Irish peerage. In 1796-97 he controlled the war from London, whilst from 1798 to 1800, after the suppression of the mutiny at Spithead, he directed the siege of Brest, until St. Vincent relieved him.

Brie, agric. dist. of N. France. Its area is 2400 sq. m. It is divided into W. and E., which are respectively known as the B. française and the B. champenoise. The dist. is celebrated for its dairy produce, notably cheese.

Brie-Comte-Robert, tn. of France, in the dept. Seine-et-Marne, about 11 m. N.W. of Melun. It was once the cap. of the prov. of Brie, one of the old dists. of France between the rivs. Seine and Marne. Pop. 2500.

Brief, in Eng. law, the written document on which as basis barristers advocate

causes in courts of justice. The B. is a concise statement of the information procured by the solicitor with regard to witnesses, evidence, etc., and such comments on the case as the solicitor thinks necessary. The B. is endorsed with the title of the court and the action, and bears the name of the solicitor and of the counsel. On receiving the B. the barrister has authority to act for the client throughout the case. In Scotland the legal term corresponding to B. is memorial.

Brief (Church Brief or King's Letter). This instrument, which is now obsolete, consisted of a kind of open letter, issued out of Chancery in the king's name and sealed with the privy seal, directed to the archbishops, bishops, clergymen, magistrates, churchwardens, and overseers of the poor throughout England. It recited that the Crown thereby licensed the petitioners for the B. to collect money for the charitable purpose therein specified, and required the sev. persons to whom it was directed to assist in such collection. They appear to have been always subject to great abuse, and by a statute passed in Anne's reign a variety of provisions was made for their future regulation. The expensive machinery of collecting by B., in the exercise of which the interests of charity were overwhelmed in the payment of fees to various officials, was abolished by a statute passed in the time of George IV., which abolished the earlier statute and enacted that contributions collected should be paid to the treasurer of the 'Society for promoting the Enlargement and Repairing of Churches and Chapels.' Bs. are still to be found named in one of the rubrics in the communion service of the Book of Common Prayer.

Brief (or Breve), Papal, term used to denote papal documents which are drawn up without the full ceremony which the bull necessitates. The B. is furnished with a red wax stamp showing St. Peter drawing in a net and surmounted by the name of the pope ('the ring of the fisherman'). The B. was instituted to lessen the work of the papal chancery, hence the name.

Brieg, tn. in Lower Silesia, 45 m. S.W. of Breslau, formerly part of Prussia, occupied since 1945 by Poland. It has a number of splendid Renaissance buildings. The castle, the former residence of the dukes of B., built by 11 artists in 1547-70, was greatly injured by Frederick the Great's cannon in 1741. The industries include the making of business books, sugar, and machinery. Pop. 28,000.

Briel, seaport in S. Holland situated on the is. of Voorne, in the R. Maas, about 14 m. from Rotterdam. It has a good harbour, an arsenal, powder magazines, and barracks. The high tower of St. Catherine's Church is used as a lighthouse. The people are chiefly fishermen and pilots. Pop. 3700.

Brienne-le-Château, tn. of N.E. France, in the dept. of Aube, and 1 m. from the Aube R. Napoleon began his military studies here in 1779-84, and on Feb. 1, 1814, a battle was fought between him and Blücher, near by. Pop. 2000.

Brienne Jean de, Fr. knight whose

early hist. is obscure. The king of France declared he was the most worthy champion to defend the Holy Land. In 1209 he was crowned in Tyre and conducted a campaign against the Saracens. He captured Damietta after a siege of 16 months, during the fifth crusade. He was elected emperor of the E. in 1229 and defeated the Gks. and Bulgarians. He continued in active military life till he was over 80 years of age, and d. in 1237.

Brien, tn. of Switzerland, in the canton of Bern, and the centre of the Oberland wood-carving industry. It is picturesquely situated on the N.E. of the lake of B., at the foot of the Brienzergrat mts. The lake is 9 m. long and 3½ wide, and is formed from the R. Aar. Its waters are deep, and surrounded by beautiful scenery. Pop. 2500.

Brierfield, urb. dist. of Lancashire, England, 2 m. from Burnley. Pop. 8000.

Brierley, Benjamin (1825-96), Eng. silk-weaver, and writer in Lancashire dialect. He educated himself in his spare time, and began contributing articles to local papers, 1855. His sketches of Lancashire character attracted attention. In 1863 he gave up silk-weaving and took the post of sub-editor of the *Oldham Times*, publishing *The Chronicles of Waterlow* in the same year. He completed his first long story, *The Layrock of Langley-side* (afterwards dramatised) in 1864. In 1869 he started *Ben Brierley's Journal*, a weekly, continued till 1891. Under the pseudonym Ab-o'-th'-Yate, he wrote *Tales and Sketches of Lancashire Life, Irkdale, Ab-o'-th'-Yate in Yankee-land*. He visited America 1880 and 1884. A statue was erected to him after his death in Queen's Park, Manchester.

Brierley Hill, tn. in Staffordshire, England. It is 2 m. from Stourbridge, and it forms a part of the Black Country. It is a very busy place; much coal and iron are worked in the dist., and there are immense blast furnaces and iron foundries. Fire-clay is found also. There are potteries, brick works, and glass factories. Pop. 12,500.

Brierly, Sir Oswald Walters (1817-94), Eng. marine painter. He entered Sass's art school in London, then studied naval architecture at Plymouth, and exhibited some ship drawings at the Royal Academy 1839. He travelled with Benjamin Boyd in the *Wanderer*, and settled in Auckland for 10 years. Brierly Point is called after him. B. voyaged on the *Rattlesnake*, 1848, and on the *Meander*, 1850, with Sir Henry Keppel, whose book about this cruise he illustrated, 1853. He was with Keppel during the Crimean war. In 1855 B. pub. lithographs, 'The English and French Fleets in the Baltic'; 1856, he took sketches of the naval review at Spithead for Queen Victoria and was attached to the suites of the duke of Edinburgh and the prince of Wales on their tours by sea, 1867-68; appointed marine painter to the queen, 1874; knighted, 1885. His best pictures are at Melbourne and Sydney. In 1881 he was curator of the Painted Hall, Greenwich. Two famous works are 'The

Retreat of the Spanish Armada,' 1871, and 'The Loss of the *Revenge*,' 1877.

Briesen, see WARBRZEŃNO.

Brieux, Eugène (1858-1932), Fr. dramatist, b. Jan. 19, of poor parents in the Temple dist. of Paris. After being editor of the *Nouvelliste de Rouen*, he held influential positions on the staffs of *La Patrie*, *Le Figaro*, and *Le Gaulois*. His first play was *Bernard Palissy*, 1880, written in collaboration with Salandri; but he did not estab. himself as a playwright until his *Ménage d'artistes*, 1890, had won considerable applause at the Théâtre Libre. He freely introduced philosophical discussions into his plays, which are, for the most part, satires on various social evils. Thus in *Blanchette*, 1892, he exposes the dangers of educating girls of the working classes; in *Les Trois filles de M. Dupont*, 1897, he throws into bold relief the grave difficulties arising among girls of the middle class from the antiquated system of dowry; whilst the life of a shop girl in Paris forms the subject of his *Petite Amie*, 1902. But his field of satire is unlimited, and, Dickens-like, he empties his vials of ridicule and contempt on any abuse that at the time especially rouses his indignation. The vicious character of political life is accentuated in his *L'Engrenage*, 1894; *L'Érasion* (1896) is a satire on pseudo-science; *La Robe rouge* (1900) discloses the injustices of the law; *Les Remplaçantes* (1901) is on the evils of wet-nursing; *Les Avariés* (1901) is about syphilis; *La Petite Amie* (1902) a more general satire, on the bourgeoisie; *Maternité* (1903) concerns social hypocrisy in the matter of motherhood; *Maternity, Damaged Goods* (Fr. title *Les Avariés*), and *The Three Daughters of M. Dupont*—were pub. in England; the translation of the first-named play being by Mrs. Bernard Shaw; and the vol. containing a preface by Mr. Bernard Shaw, who saw in B. the most considerable Fr. playwright since Molière. Among B.'s later works are: *La Déserteuse*, about children and their divorced parents, 1904; *L'Armature*, adaptation from a novel by Paul Hervieu, 1905; *Les Hannelons*, showing up the absence of freedom in 'free love,' 1906; *La Française*, dealing with foreigners' misconceptions of the Fr. arising from misrepresentations by Fr. authors, 1907; *Simone*, on the evil of sympathy with the murderer of an adulterous wife, 1908; *Suzette* and *La Foi*, both on the same theme as *La Déserteuse*, 1909; *La Femme seule*, a feminist play, 1913; *Le Bourgeois aux champs*, on the incompatibility of bourgeois and peasantry, 1914; *Les Américains chez nous*, post-war comedy of old-fashioned France and new America, 1920; *L'Avocat*, also styled comedy, but declared by one Fr. critic to be 'a worthy pendant to *La Robe Rouge*,' 1922; *L'Enfant*, i.e. the War-Baby, 1923; and *La Famille Lavolette*, on the breaking up of family life, 1926. See P. V. Thomas *The Plays of Eugène Brieux*, 1915.

Brieve, a term used in Scottish law. Its general character is that it directs an inquiry to be made regarding certain

matters. The most important inquiry now conducted by Bs. is the inquest for services of heirs. This form is necessary for feudally investing an heir in his ancestor's landed property.

Brig, a 2-masted, square-rigged vessel. It was at one time a flat open boat with sails, and from 10 to 15 oars on each side, carrying about 120 men. A brigantine, or hermaphrodite B., is a small 2-masted vessel, square rigged on the foremast only, the other sails being fore-and-aft sails.

Brigade, military formation, consisting of a group of regiments acting under a maj.-gen., brig.-gen., or col. The Brit. infantry B. consists of 4 (occasionally 3) battalions and medical transport and supply units. In other European countries the infantry B. consists of 2 regiments, each containing 3 battalions. In the U.S.A. an infantry B. comprises 2 regiments totalling about 6500 all ranks; a cavalry B. also comprises 2 regiments totalling about 3000 all ranks; an artillery B. also has 2 regiments totalling about 3500 all ranks, 75 guns, and over 40 machine guns. There are 3 regiments of cavalry in the Brit. cavalry B. In the Brit. service an Air-Defence B. consists of 3 anti-aircraft artillery Bs., 1 anti-aircraft searchlight battalion, R. Engineers, and Air Defence B. Signallers of the Royal Corps of Signals. The staff of a B. (infantry or cavalry) consists of the commanding brigadier, an aide-de-camp, the B.-maj., and a staff officer. A B. in the full sense of the word is non-existent in Britain in times of peace except during military manoeuvres and in military practice camps. The word, however, is loosely applied to the Life Guards, Horse Guards, and Foot Guards, i.e. the Household B. All troops stationed in a dist. fall under the B. command of that dist. irrespectively of the number and type of troops. The cols. holding such B. command have office for a term of 5 years unless they are raised to the rank of maj.-gen. The 'Rifle Brigade' is an ordinary infantry regiment; the title 'Brigade' commemorates the fact that at one time in the early nineteenth century the regiment had 9 battalions.

Brigade-Major, officer, according to Eng. military usages, acting to the brigadier as the adjutant of an ordinary regiment. He thus undertakes the corresponding duties of the B., having under him a staff of clerks, inspects guards, and directs movements. In the Brit. Army such offices are held at camps of exercise (e.g. Aldershot), or during active service and manoeuvres. The officer resumes his ordinary duties when his services as B.-M. are no longer required.

Brigadier, rank in the Brit. Army held by the commander of a brigade, formerly B.-Gen. In exercise camps (e.g. Aldershot, Chatham) maj.-gens. held also the rank of B.-Gens.; a col., however, held the position of B.-Gen. during the temporary formation of a brigade, but he resumed his ordinary regimental duties when the brigade was dispersed. Cols.

held the command in the brigade divs. of India for a term of 5 years. Shortly after the First World War the title of B.-Gen. was abolished in the Brit. Army, and 'Colonel-Commandant' substituted; but in 1928 the title of Colonel-Commandant was abolished and 'Brigadier' substituted. A B. in the Fr. Army is a cpl.

Brigandine, so called from the brigands, was the term used for a coat of mail armour which was worn in the Middle Ages. It was made of steel rings or plates, fastened on leather or linen, and then covered with some material in order that the metal should not be seen.

Brigands, name originally applied to mercenary or irregular troops. The word has become degraded in meaning and is now used to designate bands of outlaws who live by rapine and plunder. B. have usually been found to be malcontents or there mnant of a people whose country has been overrun by invaders. Notable B. were Spartacus and his gladiatorial bands in anct. Italy, the later B. of Italy and Spain, the Scottish raiders, Australian bushrangers, and the dacoits of Asia. Mountainous countries have ever been favourable to the practice of brigandage. Competent rural police have crushed the vice out of most civilised countries, but in Sicily, the Balkans, and Turkey the practice is by no means yet extinguished. Brigandage has been a favourite topic of romance, but the great majority of B. when judged impartially are unromantic types of character.

Brigantes (from Celtic, meaning mountaineers), tribe of people inhabiting N. Britain. The dist. actually occupied was between the Humber, then the Abus, and the Mersey, then the Belisama. Eburacum (York) was their chief tn., and Ostorius Scapula was the first Rom. to come into contact with them, defeating them during the reign of Claudius. They were not thoroughly subdued till the reign of Antoninus Pius. They had an eponymous goddess whose name was Brigantia, and mention of her is found in various inscriptions. Near the R. Barrow a branch of the B. settled in S.E. Ireland.

Brigantine, see BRIG.

Brigantium Flavium, see BETANZOS.

Briggs, Charles Augustus (1841-1913), Amer. divine, was minister of the Presbyterian church of Roselle, New Jersey, 1869-74, and from 1874 was prof. at the Union Theological Seminary. He was a famous Heb. scholar. For 10 years he was editor of the *Presbyterian Review*. 1880-90, and in 1892 he was tried before the New York Presbytery on a charge of heresy, and acquitted. He had questioned the truth of certain statements in the O.T., and exposed the falsehood of some scriptural tradition. In 1889 he became a priest in the Protestant Episcopal Church.

Briggs, Henry (1556-1630), an Eng. mathematician. He was a native of Yorkshire, and b. at Warley Wood, near Halifax. In 1581 he obtained his degree at St. John's College, Cambridge, and 7 years later obtained a fellowship. He

was appointed leader of the physical lecture founded by Dr. Thomas Linacre. An important change in the compilation of logarithms brought him into close personal contact with John Napier, whose hyperbolic form had till then sufficed. B. proposed that alteration of the scale of logarithms from the hyperbolic form to that in which unity is assumed as the logarithm of the ratio of ten to one. At the end of the second visit to Napier the new system was pub. in 1617. He received the appointment of Savilian prof. of geometry at Oxford in 1619. In 1624 he produced his stupendous *Arithmetica Logarithmica*, a work containing the logarithms of 30,000 numbers worked to 14 places of decimals. He d. on Jan. 3, 1630, and was buried at Merton College Chapel, Oxford. His life was noted for its abstemiousness, studious application, and contentment.

Briggs, Henry Perronet (1793-1844), Eng. painter, joined the Royal Academy as a student in 1811. Most of his pictures have historical subjects, though, after he became an R.A. in 1832, he painted many portraits, that of Lord Eldon being considered his best. The National Gallery acquired his 'Juliet and the Nurse.'

Brigham, city in Box Elder co., Utah, U.S.A. Pop. 5600.

Brigham Young University, educational institution for students of both sexes founded at Provo, Utah, in 1875 under the auspices of the church of the Latter Day Saints. Courses of instruction are given in science and art, commerce, pedagogy, etc.; and there are also sections devoted to research. It contains a fine library and athletic grounds.

Brighella (It., diminutive of *briga*, strife, brawl), name applied to a rustic clown, one of conventional types in old It. comedy. Trickster and plotter, always leaving the 'execution' to Arlecchino, another comic character. Dressed in white trimmed with green.

Brighouse, tn. in the W. Riding of Yorkshire, Eng., 4 m. E.S.E. from Halifax. Its prin. industry is the making of woollen, cotton, and silk goods. Pop. 20,000.

Bright, Sir Charles Tilston (1832-88), Eng. civil engineer. In 1853 as engineer to the Magnetic Telegraph Company he superintended the laying of the first deep-water cable between Great Britain and Ireland, from Portpatrick (Scotland) to Donaghadee (Ireland). B. organised with Field and Brett the Atlantic Telegraph Company, 1856, himself becoming chief engineer. After 2 disappointments, he succeeded in laying a submarine cable connecting Ireland and Newfoundland, thus being first to estab. communication by telegraph between Europe and America. The first cable failed after working 68 days. Later B. laid cables in the Mediterranean, Persian Gulf, and W. Indies. With Clark he discovered improved methods of insulating submarine cables. Their paper on electrical standards caused the formation of the Brit. Association Committee on the subject. B. was knighted, 1858; in 1865-68 was

Liberal M.P. for Greenwich. See the life by his son (revised ed., 1908).

Bright, John (1811-89), Eng. statesman and orator, b. at Rochdale. His father, Jacob B., was a mill-owner there and a member of the Society of Friends; his first wife dying without children, he married Miss Martha Wood, of Bolton-le-Moors, and John B. was the second child of his marriage. He was not a strong boy, and his education was in consequence somewhat irregular. Like Shakespeare, he knew 'little Latin and less Greek,' but his natural taste for Eng. literature was fostered and directed by his mother, a woman of excellent sense and firm character. To his constant study of our best authors he owed that command of strong, pure, and racy Eng. which distinguished him throughout his career. He entered his father's business, and, as a nonconformist, took an active part in local politics, as also in the temperance movement, in connection with which his first public speeches were delivered. He also helped to found a literary and philosophic society in Rochdale, in whose debates he took part. In 1837 he made acquaintance with Cobden, who was then beginning to speak against the Corn Laws, and very soon joined him, serving on the Manchester committee which founded the Anti-Corn Law league in 1839. In that year B. married Elizabeth Priestman of Newcastle-on-Tyne, but their happy union was cut short by her early death in 1841. During his first week of mourning Cobden came to visit him, and, as B. afterwards said, roused him from despair by calling upon him to give himself to the service of thousands of Eng. homes where mothers and children were dying of hunger. B. responded to the appeal, and thenceforward the 2 friends were the prin. figures in the league. In 1843 B. was defeated as candidate for Durham, but the victor was unseated on petition, and at the new election B. was returned. He spoke in the House of Commons for the first time on Aug. 7, 1843, and made a favourable impression, though he had at first been received with hostility by the majority of members, on account of his reputation as an 'agitator.' At that time Sir Robert Peel's 'sliding scale' was in force, by which the price of wheat was not allowed to fall below a certain point, roughly speaking 60s. per quarter. The league were determined on getting rid of the duty entirely, but were making slow progress until they were seconded in 1845 by a terrible ally, the famine in Ireland caused by the potato disease, which forced Peel first to resign, then to return as the leader of what was practically a Free Trade ministry. In Mar. 1846 the Corn Laws were repealed, and in July the Anti-Corn Law league was dissolved. In June 1847 B. married Miss Leatham of Wakefield, and in July was elected for Manchester without opposition. He had now risen to a very high parl. position, and in 1849 won applause from Disraeli for a great speech on the question of financial aid for Ireland. In 1852 he was again returned for Manchester, and

took part in the memorable vindication of Peel's policy, when Disraeli's attack was defeated by 468 to 53. He fought hard against the advocates of the Crimean war, also against Palmerston's action in China and Persia, and was consequently defeated at Manchester in Apr. 1857, but in Aug. was returned at Birmingham without contest. In 1858 he took a leading part in the admission of Jews to parliament, and in the transfer of the gov. of India from the E. India Company to the Crown. During the Reform agitation from 1859 to 1867 he was one of the leading speakers, and was a chief factor in the return of the Liberals to power under Gladstone in 1868, when he was made Privy Councillor and president of the board of trade. For 4 years he was kept out of parliament by a serious illness, but in 1873 came once more to the front as chancellor of the duchy of Lancaster. In 1875 he was chairman of the party meeting which elected Lord Hartington as leader on the retirement of Gladstone, and in 1878 took an impressive share in the debates on the Russo-Turkish war. His severance from Gladstone began on the Egyptian question in 1882, but was not complete until 1885-86, when he defeated Lord Randolph Churchill at Birmingham by a large majority, and helped to crush the Home Rule Bill. In 1883 he spoke strongly of 'the Irish rebel party,' and accused them of having exhibited 'a boundless sympathy for criminals and murderers.' Refusing to apologise in the House for these words, he was enthusiastically cheered, and at the election of 1886 his influence was predominant in securing the defeat of Gladstone. This, however, he felt keenly, and he spoke most feelingly of the breaking up of old associations. In May 1888 he was again taken ill, and d. in the Mar. following.

See *Speeches on Questions of Public Policy*, ed. by J. E. T. Rogers, 2 vols., 1858; *Public Addresses*, ed. by J. E. T. Rogers, 1879; *Public Letters*, ed. by H. J. Leech, 1885; G. B. Smith, *Life and Speeches of Bright*, 1881; G. M. Trevelyan, *Life of John Bright*, 1925.

Bright, Richard (1789-1858), Eng. physician, b. at Bristol. He studied medicine at Edinburgh Univ., Berlin, and Vienna. In 1827 he pub. a collection of *Reports of Medical Cases*, in which he gave the first account of his researches on dropsy with which his name is now associated. B's discovery that the kidney was the seat of the disease was one of the most important discoveries in medicine in the nineteenth century.

Bright, Timothy (c. 1551-1615), Eng. physician and clergyman, also inventor of modern shorthand. He took the degree of M.D. at Cambridge, his medical works showing remarkable knowledge of the doctrines of early Gk. writers. Queen Elizabeth gave him livings of Methley, 1591, and Barwick-in-Elmet, 1594, in Yorkshire. His *Treatise of Melancholie*, 1586, possibly suggested Burton's more famed *Anatomy*. B's *Characterie*, a method of 'short, swift, and secret writing,' 1588, is only partly alphabetical.

Willis's *Stenography*, 1602, is the real precursor of our modern systems. See *Shorthand*, 1884; Lewis's *History of Shorthand*, 1815. See also SHORTHAND.

Bright, William (1824-1901), Eng. historian, was at Rugby during Dr. Arnold's headmastership, and thence proceeded to Univ. College, Oxford, holding a fellowship there, 1847-67. In 1858 he was obliged to give up his tutorship at Trinity College, Glenalmond, which he had held since 1851. His criticism of Henry VIII's church settlement had aroused indignation. In 1868 he was appointed regius prof. of eccles. hist. at Oxford. His lectures were remarkable for their fervour and quaint humour. From 1895 he was sub-dean of Christ Church. His chief works were *A History of the Church*, A.D. 313-451, 1860; *Chapters of Early English Church History*, 1878; and *The Age of the Fathers*, posthumous.

Brightlingsea, seaport and par. in Essex, England, situated 8 m. to the S.E. of Colchester. It is on the R. Colne, at its estuary. It has important oyster fisheries. Pop. 4500.

Brightman, Frank Edward (1856-1932), Eng. liturgist and historian, b. at Bristol, June 18. Educated at Bristol Grammar School and Oxford Univ. Ordained deacon, 1884, and became one of the librarians of Pusey House, 1903. Was an examiner in theology in 1890, and, in 1902, made a prebendary, this being the highest position he attained in the Church though his merits would probably have entitled him to greater preferment. He was the foremost liturgical scholar of his day in England, and his *Liturgies, Eastern and Western*, and his introduction to his *English Rite* (1915) proved him to be without a rival in this branch of learning. He was a first-rate historian, and both archbishops Temple and MacLagan used his learning in the *Responsio* to the bull *Apostolicæ Curiae* of Leo XIII. in 1897. But B's main interest was not in controversial theology, for he contributed many valuable articles to the *Dictionary of Church History*, 1912, notably on the hist. of the prayer book. He disliked the deposited book of 1927, and was strictly loyal to the old prayer book. (Consult on this his criticisms in *Church Quarterly Review*, July 1927.) Other writings include a study of Bishop King of Lincoln, 1912; in Swete's *Preces Privatae*, and *Manual for the Sick*, 1909. D. Mar. 31.

Brighton, tn. in Bourke co., Victoria, Australia, situated 8 m. S. of Melbourne by rail. Its fine situation on Port Phillip Bay has made it a fashionable watering-place. Pop. 21,000.

Brighton, a popular watering-place of Sussex, England, 51 m. S. of London. The old name of the tn. was Brightelmstone, which was corrupted about the beginning of the nineteenth century into Brighton. The popularity of the tn. as a watering-place was not assured till 1782, when the prince of Wales spent a holiday there in the company of the duke of Cumberland. The prince found the climate agreeable, and built the pavilion

there in 1784 and took up a yearly residence in the tn. Brighton was made a parl. bor. in 1832, and a municipal bor. in 1854. The buildings of the tn. are imposing. In 1849 the pavilion, which is said to have cost £1,000,000, was purchased by the tn. for £50,000, and is now utilised as a museum, picture galleries, assembly room, and concert hall. The concert hall is known as the Dome; it can accommodate 3000 people. The streets are of substantial modern architecture. The promenade is magnificent and extends along the coast for about 4 m. A terrace of the finest houses in Brighton fronts the sea. There are 127 places of worship in the tn., of which the Holy Trinity Church is famous owing to the preaching of F. W. Robertson. Outside that of St. Nicholas is the tomb of Nicholas Tattersell, the skipper of the collier in which Charles II. escaped to France in 1651. The museum of Brit. birds containing the collection bequeathed by E. T. Booth was opened in 1893. It is the finest collection of Brit. birds in the world. The schools of B. are numerous and good, notably B. College. Roedean is a famous school for girls. The tn. has many charity institutions, and the co. hospital is 'open to the sick and lame poor of every country and nation.' B. has no maritime trade; there are, however, considerable mackerel and herring fisheries. The water supply is derived from the chalk, the sources of which are within a short distance from the tn. In the summer the watering-place is the resort of many holiday-makers, chiefly from London. Hence the tn. has been called London by the Sea, but the long vista of sea-front backed by palatial buildings, when lit up by myriads of lights, presents a spectacle which London cannot equal. King's Road is one of the finest thoroughfares in Great Britain, but the aquarium, at one time a great attraction, was replaced in 1925 by public gardens with some fish tanks. The West Pier is 1100 ft. long and has a landing-stage of 720 ft.; the Palace Pier is 1710 ft. in length. The bor. was extended in 1927. During the 10 years before the outbreak of war in 1939, a number of major development plans were successfully carried out, notably the protective works for the undercliff walk and foreshore from Black Rock to Saltdean, the construction of the Black Rock bathing pool and the Madeira Drive, a promenade from the Palace Pier to the Black Rock. Further promenade works were held up by the war, but plans have since been revived. Within the tn. itself a covered mkt. has been built, and recent building construction has included community centres, clinics, and branch libraries. During the war enemy air attack resulted in the demolition of 200 houses, while 900 were seriously damaged. In all there were over 50 air-raids, and the casualty list numbered nearly 1000. The bor. sends 2 members to Parliament. The municipal bor. has a mayor, 14 aldermen, and 42 councillors. Pop. 148,000. See A. Dale. *Fashionable Brighton, 1820-1860*, 1948.

Bright's Disease, see NEPHRITIS.

Bright, St., of Kildare (other forms, **Brigid and Bridget**) (c. 452-523), known as Bride of Kildare, was, according to legends, the daughter of a prince of Ulster. She lived a life of seclusion in the woods, and hence the name Kildare—Kil-dara, church of the oak. She is said to have performed many miracles. St. B., St. Patrick, and St. Columba are the 3 patron saints of Ireland. The saint is known in England and Scotland as St. Bride.

Brignoles, tn. in the dept. of Var in S.E. France. It is famous as being the old summer residence of the counts of Provence. The surrounding country is fertile. Plums are the chief products—*prunes de Brignoles*. Pop. 5000.

Bril Matthew (1550-84), Flemish landscape-painter, b. at Antwerp. He studied art in Italy during the pontificate of Gregory XIII., by whom he was appointed to paint sev. frescoes of the Vatican. He showed remarkable talent, but he d. when comparatively young.

Bril, Paul (1554-1626), Flemish painter. He was a native of Antwerp, and was led to live in Rome by the success attained by his brother Matthew, of talents inferior to those of Paul. On his brother's death Paul succeeded to his pensions, and adopted landscape painting, in which he excelled. 'The Martyrdom of St. Clement' is one of his masterpieces, and it reposes in the Sala Clementina of the Vatican.

Brill (*Rhombus laevis*), flat-fish of the same genus as the turbot, *R. marinus*, but it is smaller, smoother, and more shining in appearance. It belongs to the acanthopterygious family Pleuronectidae.

Brill, vil. in Bucks, Eng., 59 m. from London. Pop. 1000.

Brillat-Savarin, Anthelme (1755-1826), Fr. gastronomist, b. at Belley. In 1793 he became mayor of Belley. To escape proscription he fled from France to Switzerland, and subsequently to America, where he played in the orchestra of a New York theatre. He returned to France on the fall of Robespierre and wrote his posthumously pub. famous *Physiologie du Gout*, a witty compendium of the art of dining. Many eds. and translations of the work have been pub.

Brilliant, diamond cut to resemble two truncated cones placed base to base; the sides are covered with facets.

Brilliant, Grigorii Yakovlevich, see SOKOLNIKOV.

Brilliant Second. The Ger. epithet during the First World War for Austria-Hungary. The origin of this designation seems to have been in the telegram sent to Count Goluchowski, the Austrian foreign minister of 1914, by the German emperor applauding him as a 'brilliant second' in the 'tournament' of Algeiras. It was intended thereby to flout Russia just as the telegram to President Kruger in 1899 was meant as a rebuff for Great Britain.

Brilon, tn. of Germany, in the prov. of Westphalia, situated 22 m. E. of Arnsberg. The tn. is of great antiquity, and

in the Middle Ages was of considerable importance. Pop. 6000.

Brimstone, see SULPHUR.

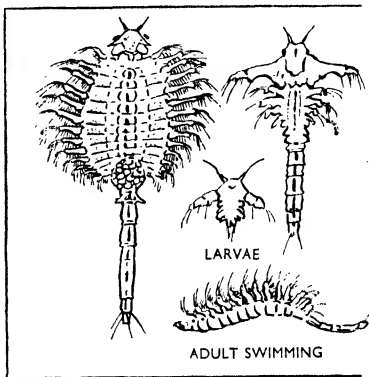
Brin, Benedetto (1833-98), It. naval administrator, worked at first as a naval engineer. In 1873 he became under-secretary of state. B. was the right man to carry out the designs of Admiral Saint-Bon, the minister of marine. When in 1876 Depretis appointed him minister of marine, he supervised the construction of the great warships *Italia* and *Dandolo*. He was for eleven years in the Gov., 1876-98—1876-78 with Depretis, 1884-91 with Depretis and Crispi, 1896-1898 with Rudini—and during that time he was responsible for the establishment of shipyards and factories for the production of guns, steel plates, etc. As minister for foreign affairs, 1892, he accompanied the king to Potsdam. He may be regarded as the founder of the It. navy.

Brindaban, tn. in the United Provs. of Agra and Oudh, India, famous as the place where the god Krishna stole the clothes of the milkmaids. A large red temple dating from 1590, one of the most interesting and elegant in India, is sacred to him. Pop. 15,000.

Brindisi, seaport of S. Italy, in the prov. Lecce. Its anct. name was Brundisium. It is situated on a small cape in a bay of the Adriatic Sea. In 267 B.C. it was captured by the Romans from its previous occupants, the Sallentin. Twenty years later the Romans estab. a colony there, and the tn. advanced quickly by reason of its splendid harbour. So excellent were the advantages offered by it that it became Rome's chief naval station, while its pop. speedily reached 100,000. A journey to Brindisium is the subject of one of Horace's satires, and it witnessed the death of Virgil, in 19 B.C. The fall of the Roman Empire caused much havoc to be wrought within the city. It recovered slightly on its adoption by the Crusaders as their chief port under the Normans. But this prosperity was short-lived, and it soon decayed. Wars and earthquakes further aided its hastening fall, and the city underwent great damage. The finest buildings are now in ruins. Among them are the cathedral (1150) and a castle built by Frederick II. and Charles V. An archbishop has his seat there. The fertility of the dist. is still remarkable in its production of olive oil. The chief exports are wine, spirits, oil, and dried fruits. B. is the best harbour on the W. coast of the Adriatic, and prosperity was restored to it by the opening of the Suez Canal and the overland route to India. Its harbour was of great importance during the First World War. Before the Second World War it had communication by air with Athens and Istanbul. It was bombed by the Allies in 1941 and occupied on Sept. 12, 1943. Pop. 42,000.

Bridley, James (1716-72), Eng. engineer. He was b. at Thornsett, Derbyshire, and he received a very scanty education. His apprenticeship to a wheelwright seems to have nourished his mechanical genius, for he speedily set up

in business for himself and became famous for the ingenuity he displayed. He assisted the duke of Bridgewater in carrying out his famous canals, and the success of the Manchester Ship Canal must be attributed first to the indomitable genius of B. He d. at Turnhurst, Staffordshire.



BRINE-SHRIMP

Brine-shrimp, or *Artemia*, is the generic name of some crustacea belonging to the group Phyllopoda of the Branchiopoda. They inhabit salt lakes, and some interesting experiments have been made to provide that with an alteration in the salinity of the water one species changed to another. See W. J. Bateson's *Materials for the Study of Variation*, 1894.

Brink, Bernhard Egidius Konrad Ten (1841-92), Dutch philologist, b. at Amsterdam. He studied at Münster and at Bonn. In the year 1870 he was appointed prof. of modern languages and literature at Marburg, and in 1873 he held the same position at Strassburg. He contributed much valuable information on Eng. philology. Chief works: *Chaucer-Studien*, 1870, and *Geschichte der Englischen Literatur*, 1874.

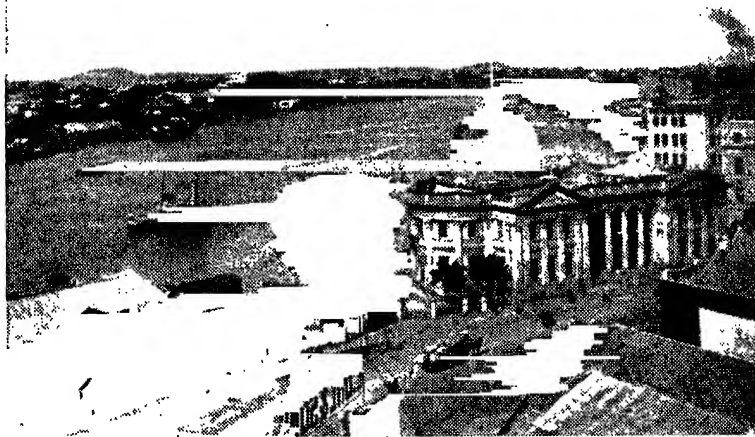
Brink, Jan Ten (1834-1901), Dutch author, b. at Appingadam. He commenced a course of theology, but found that his talents were literary rather than theological. In 1862 he became a teacher of Dutch at The Hague, and there wrote sev. works of criticism and of romance. His style is very lucid and elegant, and his criticisms are acute and penetrating. Among his best works are a novel entitled *Het verloren Kind*, 1879, and a remarkable critique on modern fiction, entitled *Causieren over Moderne Romans*, 1885.

Brinton, Daniel Garrison (1837-99), Amer. archæologist and ethnologist, b. at Thornbury, Pennsylvania; graduated at Yale and studied medicine in Paris and Heidelberg. Acted as surgeon in the Union army during the Civil War. Was appointed prof. of Amer. linguistics and archæology at univ. of Pennsylvania in 1886, a post which he held until his death.

Among his works are: *The Myths of the New World*, 1868; *American Hero Myths*, 1882; *The American Race*, 1891; (ed.) *Library of American Aboriginal Literature* (8 vols.), 1882-90.

Brinvilliers, Marie Madeleine, Marquise de (c. 1630-76), noted Fr. criminal. She married the marquis de Brinvilliers in 1651. She learned the secrets of poisoning from her lover, Jean Baptiste de Gaudin, Seigneur de Sainte-Croix, who had heard them from an Italian, Exili, in the Bastille. B. poisoned her father, two

mill'; steam is introduced till the pitch is viscid, and then the mixture is left to cool in moulds. Manufacturing processes vary with the fuel from which the B. is to be made. Lignites and brown coal will briquette without any admixture, as will some bituminous coals; but most bituminous coals, all anthracites, and coke breeze must be mixed with a binding medium to give coherence and hardness to the B. Various other substances, such as tar, asphalt, starch, peat, etc., may be used in the manuf. of Bs. The weight of the B.



Queensland Gov.

BRISBANE

The Customs-house and Circular Quay

brothers, and a sister, but failed in her attempt to poison her husband, who had been given antidotes by Sainte-Croix. Sainte-Croix d. by accidental poisoning in 1672, and the investigations as to the cause of his death revealed B.'s crime. She fled, but was arrested near Liège, and executed in Paris, July 1676.

Brioni, is. of Yugoslavia in the Adriatic Sea, near Pola, being the largest of the Brione group.

Briovera, see **St. Lô**.

Briquette (Fr., small brick), name given to a kind of fuel, made up chiefly of waste coal-dust. It smoulders for many hours without going out, and can give out a very fair amount of heat. It is also used in various industries. The dust is cleansed and dried and then mixed with pitch in a disintegrator, until the two ingredients have thoroughly blended. The mixture is then placed in a vertical 'pug-

may be anything from about 28 lb. to a few oz. each, depending on requirements. The value of the briquetting process lies in its ability to convert fuel which otherwise would have little if any value into a marketable product.

Brisbane, chief seaport, cap., and commercial centre of Queensland, Australia, situated on the Brisbane R., about 25 m. above Moreton Bay. It was first settled as a penal station in 1824 by Sir Thomas Brisbane (q.v.), governor of New S. Wales. The convict station was broken up in 1839; in 1842 B. was opened for colonists; and in 1859 it was incorporated. The tn. has four divs.: North B., South B., Kangaroo Point, Fortitude Valley. It is the seat of an Anglican bishop and a Rom. Catholic archbishop. There are many fine public buildings, including the Houses of Legislature, the town hall, the two cathedrals, the Queensland Club, a

museum, a technical college, and a school of arts. It is the seat of Queensland Univ., which was estab. in 1911. In 1893 the channel of the riv. was dredged and deepened, so that ocean-going steamers can come up the riv. and berth at the wharves. The riv. is navigable by large vessels to the city, over 10 m. from Moreton Bay. There is regular communication by steamship with other Australian ports, B. being one of the chief centres of trade. The prin. exports are wool, tallow, hides, sugar, coal, and frozen meat. The climate is healthy and dry; the mean temp. is 70° F. in the shade. The tn. has suffered from the flooding of the riv., notably in 1893, when much of South B. was destroyed. The bridge which spanned the R. B. was then destroyed, and the Victoria Bridge was built to replace it in 1897. Three bridges, 2 of steel and another a rainbow-arched concrete structure, provide links for traffic between the N. and S. sides of the city which are separated by the B. R. A standard gauge railway line connects with the S. states, and from B. starts the Great Northern railway which carries passengers to Cairns 1000 m. away. There are 2 large airports. B. has a wireless station, an observatory, and botanic gardens. In 1924 a new sewage system was installed. There is a notable race-course at Eagle Farm.

The city of Greater B. was created in 1925, absorbing within its boundaries 19 councils, with an area of 375 sq. m., which had been administered by 200 members. Its boundaries radiate approximately 10 m. from the centre of the city. It was the first greater city council area created in Australia. A modern feature, unique in Australia, was the adoption recently of the zoning plan of the city under which provision is made for shopping, residential, manufacturing, and industrial areas, and the creation of a green belt surrounding the city to ensure adequate park lands and recreational facilities for all time. The council consists of 21 members, including a lord mayor, all elected on the adult franchise basis, to hold office for 3 years. Civic affairs are unified under one administration. The system is unique in Australia, for in addition to carrying out the ordinary functions of local gov., since 1925 it has had under its charge tramways, electricity, water supply and sewerage, cemeteries and ferries. An outstanding constructional work completed during the Second World War was the building of a big dock in the lower reaches of the B. R., where all ships and war vessels, excepting those of the very largest type, may receive attention. The authorities have prepared a works plan to embrace the enlargement of Anzac Square in the heart of the city, the provision of a tunnel to relieve traffic congestion at Petrie's Blight, the establishment of a zoological garden, the widening of sev. city streets, the provision of more swimming pools, and the replanning of some of the more congested suburbs. The cost of these improvements is estimated at £11,000,000.

The Greater B. area (385 sq. m.) is controlled by a city council under a lord mayor. Pop. (1941) 385,000.

Brisbane, Sir Charles (c. 1769-1829), distinguished Brit. admiral; entered navy 1779, being present as midshipman at battle of the Saints off Dominica, 1782. B. served under Rodney, Hood, and Nelson. In 1796 he was posted after being present at Bridport's action off Genoa; was made captain for his capture of Dutch ships in Saldanha Bay. He helped to cut out the *Chevette* from Camarat Bay, 1801. Commanded the *Arethusa*, and with the *Anson* destroyed the Sp. *Pomona* and ten gunboats off Havana, 1806. His finest exploit was the capture of Curaçao and sev. Dutch vessels, 1807. Knighted for this by George III.; K.C.B., 1815; vice-admiral, 1820; governor of St. Vincent, 1808-29. See *Ralfs's Naval Biography*, iv; *Gentlemen's Magazine*, 1830.

Brisbane, Sir James (1774-1826), Brit. naval officer, brother of Sir Charles B. Midshipman in *Queen Charlotte* at Howe's glorious 'First of June' victory, 1794. As lieutenant served at the reduction of the Cape of Good Hope. In 1801 B. was present at the bombardment of Copenhagen, and was posted. In 1808 he commanded the squadron blockading Corfu, capturing the Fr. *Var*, 1809. Helped to reduce Ionian Is. and establish the sept-insular republic. In 1816 he served at bombardment of Algiers. As commander-in-chief in the E. Indies he concluded the first Burmese war, 1825. See *Marshall's Royal Naval Biography*, iii.; *James's Naval History*, vi., 1860; *Nelson Dispatches*, iv.

Brisbane, Gen. Sir Thomas Makdougall (1773-1860), soldier and astronomer, b. at Largs, Ayrshire. He served in Flanders, the W. Indies, Spain, and N. America, and in 1821 became governor of New S. Wales. The reforms he advocated in penal treatment and the encouragement he gave to immigration were severely criticised; but he promoted the cultivation of land. While in Australia he catalogued 7385 stars, and founded an observatory at Brisbane, which tn. was called after him. He also estab. observatories at Largs and at Makerstoun in Scotland. He succeeded Scott as president of the Royal Society of Edinburgh in 1833, and was president of the Brit. Association.

Briseis, maiden of Lyrnessus, also known as Hippodamia, was the cause of the quarrel between Achilles and Agamemnon. She came into the hands of Achilles when Lyrnessus was taken by the Greeks. Agamemnon took her away from Achilles, who thereupon refused for a time to appear on the field of battle.

Brisighella, tn. in the It. prov. of Ravenna, situated 7 m. to the S.W. of Faenza on the slope of a hill crowned with a castle. Pop. 4400.

Brisson, Barnabé (1531-91), Fr. lawyer. In 1575 he became advocate under Henri III., and later was sent as an ambas. to England. After the death of Henri III. in 1589 he became the leader of the people, being nominated first president by the Catholic Leaguers. Later,

however, he vacillated between the royalists and the people, and being suspected was arrested, in spite of a warning to flee, by order of 'The Sixteen,' and put to death at once. Among his chief writings are *De formulis et sollemnibus Populi Romani verbis*, 1583; *Le Code du roy Henri III.* See P. Le Bas, *Dictionnaire Encyclopédique*, 1843.

Brisson, Eugene Henri (1835-1912), Fr. politician, was called to the Bar (Paris) in 1859. He was vice-president of the Assembly in 1879, and president in 1881. He was Prime Minister four years later; but it was during his presidency of the Chamber, 1895-8, and his ministry, 1898, that he distinguished himself by his judicious administration at the time of the Dreyfus trial. He was also president of the Panama commission, and one of the three founders of *La Revue politique*. He was again president of the Chamber of Deputies from 1905 until his death in 1912.

Brisson, Mathurin Jacques (1723-1806), zoologist and natural philosopher, b. at Fontenay-le-Comte. Studied for the Church but did not take orders, preferring to pursue natural science. Became assistant to Réaumur and in 1756 pub. the first vol. of his work on the animal kingdom; but after Réaumur's death in 1757 he abandoned natural hist. for physical science. He was appointed a prof. at the Collège de Navarre and at the Ecoles Centrales in Paris. Some of his best-known works are those on ornithology—among them his *Ornithologie* (6 vols.), 1760; *Pésonianne spécifique des corps*, 1787; *Dictionnaire Raisonné de Physique*, 2nd ed., 1800.

Brisot (de Warville), Jacques Pierre (1754-93), Fr. Girondist. He was a native of Chartres, and the son of a Fr. innkeeper. After a good education he entered a lawyer's office. The influence of Rousseau is discernible in his *Théorie des lois criminelles*, 1781, and *Bibliothèque philosophique du législateur*, 1782. The dedication of the former work was to Voltaire, who showed great approval. The periodicals, the *Mercur*, the *Courrier de l'Europe*, and others, soon recognised his abilities as an accomplished writer, and accordingly secured his services. After an unsuccessful attempt to found a newspaper in London, he was sent to the Bastille on a charge of sedition. His release only meant the renewal of his revolutionary activities, and he was compelled to seek asylum in London. He founded the Société des Amis des Noirs as a result of his acquaintance in London with prominent abolitionists. The Revolution found in him an ardent champion. The keys of the Bastille were given to him on the destruction of the prison, and he was elected a member of the legislative assembly and later of the National Convention. The vicissitudes of the following period of change and variation saw his arrest with other marked Girondists, and he d. with them on Oct. 31, 1793. See *Mémoires de Brisot*, Paris, 1830.

Bristle Tails, see THYSANURA.

Bristles, the strong, stiff hairs growing

on the back of the hog and the wild boar. They are used in the manuf. of brushes, and by shoemakers and saddlers. The quality of the B. depends on length, stiffness, colour, and straightness. The longest and strongest are yielded in relatively small proportion, and are of high value; these are not made into brushes, but are bought by shoemakers. As to colour, the white B. are more valuable than the black and grey ones. Great Britain normally imports vast quantities of hogs' B. from Russia, Germany, France, Belgium, China chiefly, with smaller supplies from Denmark, Holland, the U.S.A., and the E. Indies. The hog of cold countries yields the best B.; those coming from Russia (with Siberia) are the most valued, but France produces excellent white ones. The long thin animal of the N. becomes fat in the S., and its B. deteriorate, becoming softer, shorter, and less straight. The hog sheds its B. by rubbing itself against trees.

Bristol, cathedral city, municipal, co., and parl. bor., an anct. seaport, and a modern industrial and distributive centre of W. England. The co. of B. lies on the borders of Gloucestershire and Somersetshire, the city proper being in Gloucestershire, though some of its suburbs are in Somerset. It stands on the Avon, 9 m. from the Bristol Channel and 118 m. from London, and can be reached by two railways. The tn. originally occupied a position wholly on the N. of the Avon. The alteration of the course of the Frome by digging, in 1248, a fresh channel, and the erection of a bridge spanning the riv., added to the area of the tn., linking it also with Redcliffe, owned by the Berkeley family. Later, in 1373, all the dists. were joined, though not without violent opposition from the lords of Berkeley. Founded upon a few ac. of land forming a mound at the confluence of two rivers, the tn. was favourably sited, both for defence and trade communications, and at one time it was the first seaport in Christendom and its old streets were filled with foreign seamen. The atmosphere of the tn. in the old seafaring days was brilliantly reflected by R. L. Stevenson in *Treasure Island*, and the 'Llandoger Trow' is the inn which Long John Silver was supposed to have frequented. Clifton is famous for the downs and views of the Avon Gorge, spanned by Brunel's 700-ft. suspension bridge, hung 245 ft. above high-water mark.

The city contains a splendid array of architectural beauties of considerable antiquity. The cathedral, originally a Norman abbey church, still shows its Norman chapter-house and fine gateway. Other notable churches are St. Mary Redcliffe, a thirteenth-century foundation of striking beauty, which was described by Queen Elizabeth (Tudor) as the fairest church in all the kingdom, St. Philip's, and St. Stephen's. Altogether there are 225 places of worship in use; 28 buildings were destroyed in air raids and 34 damaged. Only the shell of the Temple Church remains. The Rom. Catholic church has a pro-cathedral and 10 other

churches. The estab. Church of England has, besides the cathedral, 39 par. churches. The centres of education are the univ., Clifton College, Queen Elizabeth's Hospital, Red Maid's School, the grammar school (endowed 1532), and Colston's Schools. The univ. was chartered in 1909. King George V. opened its new buildings on June 9, 1925. Architecturally the univ. is handsome and dignified, and is especially noted for its magnificent neo-Gothic tower, which is a prominent landmark. There are faculties of medicine, arts, science, engineering, and law. A chair of aeronautics is a later addition. There is also an agric. research station. Clifton College, a public school, was founded in 1862 and has accommodation for about 800 boys. Among its notable alumni were Sir Henry Newbolt, Earl Haig, Sir Wm. Birdwood, and Sir Arthur Quiller-Couch. The art gallery (1905) has a collection of interesting modern paintings. The adjoining museum was destroyed in an incendiary raid, but many of its salvaged contents are housed temporarily in the art gallery. The central library was opened in 1906 and there are many branch libraries, some of most modern design.

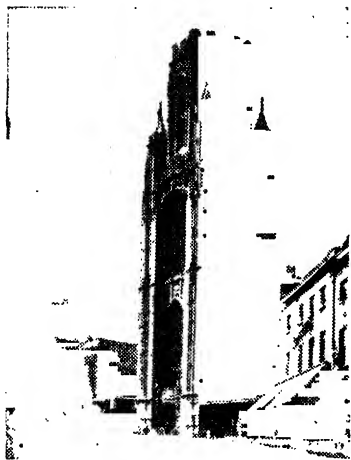
Centuries of trade with Europe and, later, with America, gave rise to a thriving balanced industry in the B. area, and the ease with which raw materials could be obtained led to the establishment of more than 300 separate types of industry. Chief among the many industries is engineering, at which 41,400 workers are (1948) occupied. Shipbuilding, motor car, and aircraft building also absorb large numbers of employees. Nearly 10,000 persons are employed in the tobacco-making industry, and as many are engaged in printing. Other notable industries are: clothing, cocoa and chocolate, chemicals, footwear, pottery, tanning, and wood working. B. is the home of the B. Aeroplane Company, builders of the Brabazon, Wayfarer, Blenheim, and other aircraft; of Wills, a branch of the Imperial Tobacco Company, and of Fry & Sons, cocoa and chocolate manufacturers. The distributive trades engage over 18,000 workers. Two aerodromes, the world's largest covered goods depot, good road and canal systems still further facilitate relations with all parts of the United Kingdom. The municipal airport was opened in 1930. Although plant and storage accommodation suffered destruction during the air raids of 1940-41 plans have been made for adequate modern industrial facilities.

B. is the largest municipally owned port in the country. The dock undertaking is administered by a committee of the corporation under the title of Port of B. Authority. The corporation are also the conservancy authority and the pilotage authority. The docks, consisting of a total land and water area of 1241 ac. and a total length of quays of 39,390 ft., comprise the Royal Edward and Avonmouth docks, situated on the Gloucestershire side of the Avon estuary, the Portishead dock on the Somerset side of the

estuary and the city docks about 7 m. up the R. Avon in the heart of B. B.'s leading position as a port is due to its excellent geographical position at the head of the B. Channel, which provides an outlet of about 100 m. from the open sea. The pop. within the area which can be economically served by the port is over 12,000,000, including the industrial midlands. The port has trading connections with all parts of the world and also a very extensive coastwise trade. The prin. trades of the port are as follows: *Imports*: grain, bananas and other fruit, refrigerated produce, petroleum, tobacco, cocoa, zinc, acid and fertilisers, timber, flour and grist milling, oil seeds, molasses, wine, canned goods, heavy chemicals, paper and woodpulp. *Exports*: chemicals, metals (tinplates, iron and steel), ores, clay, salt-cake, and all kinds of manufactured goods. A quarter of all the United Kingdom's tobacco imports passes through B., a million tons of petroleum by-products are received annually and, during the war years, B. was the world's largest petroleum importing centre; and as one of the prin. banana-importing centres of England, B. normally receives 6,000,000 bunches annually.

The origins of B. are so remote as to be unknown. Tradition ascribes the foundation of the tn. to Brennus and Bellinus, who are believed to have lived c. 5000 B.C. It was the discovery of coins minted at Brigstowe, i.e. place of the Bridge, B.'s early name, which proved that there was a community of some importance as early as the reign of Ethelred Unrede (978-1016). At that time the wealth of the tn. was derived chiefly from the export of slaves to Ireland. B. was besieged during the wars of Stephen. Henry II. gave the tn. its first charter in 1171, and also conceded the tn. of Dublin to B. residents. A siege occurred during the reign of Edward II., who was unable to reduce the tn. to obedience for four years. It was recognised as a 'staple' tn. in 1353, and enjoyed a considerable trade in wool, leather, wine, and salt. In discovery, colonisation, and maritime enterprise B. played a large part. In 1497 John Cabot sailed from B. in the small ship *Matthew* on the voyage which led to the discovery of the N. shores of the Amer. continent. His son, Sebastian, proclaimed the city his native tn. A considerable trade with the Amer. colonies was estab., and it was men of B. who colonised Newfoundland; for, though Humphrey Gilbert proclaimed Newfoundland to be part of Queen Elizabeth's dominions, no settlement took place until 1610, when John Guy, a B. merchant, obtained a royal charter and planted the first settlement on the Avalon Peninsula. B. also developed strong interest in the colonisation of America, and many communities named after the mother city are evidence of these links. In St. Mary Redcliffe Church are to be seen the memorial and armour of Admiral Penn, father of William Penn, founder of Pennsylvania. Sev. streets bear names marking the associations of the Penn family with the tn. In Queen Square is

the first Amer. consulate to be estab. in England. The first Catholic bishop of America was consecrated by a bishop of Clifton. In the heyday of the W. Indian sugar trade B. vied with Liverpool in the importation of sugar and the traffic in African slaves. In 1643 the city was captured by Prince Rupert, and later, in 1645, by Fairfax. A name honoured by a day being set apart for his celebration is that of Colston, a philanthropist. Sev. famous names are associated with B.: Grocyn, Wraxall, Sir T. Lawrence, and Beddoes, while Southey and Coleridge spent many of their youthful days in the city. In 1774 Burke was returned for the



Will F. Taylor

UNIVERSITY TOWER, BRISTOL

representation of B. in Parliament, though he declined the honour in 1780. The famous B. china was made by Richard Champion, and the genuine article is only that produced during the years 1773-81 (see BRISTOL PORCELAIN). Suffering and damage were caused by the riots in connection with the Reform Bill. The famous *Great Western*, the first steamer intended for transatlantic trade, was built there in 1838.

The war years 1939-45 enhanced B.'s importance as the cap. of the W. and the hub of its industrial and commercial activities. In consequence it became the regional headquarters of many ministries and controls. The city, however, suffered severely in air raids. The first serious attack was in November 1940. In those hours B. lost many of its historic buildings, almost the entire shopping area in the centre of the city, a large number of provision warehouses and factories, while the suburbs, too, suffered much damage and destruction. Six more such attacks

followed within the next five months. Some 1299 persons were killed and over 3300 injured. Over 3000 houses were totally destroyed. Among the best-known buildings lost were: St. Peter's Hospital (a medieval treasure), the seventeenth-century Dutch house, the Merchant Venturers' Hall, the Masonic Hall, St. Peter's Church (a Norman structure), Temple Church, famous for its leaning tower, and St. Augustine's, dating from 1480. In addition almshouses, schools, cinemas, hospitals, and many suburban churches were either destroyed or seriously damaged. The city council contemplates a rebuilding scheme which will give B. a new shopping centre, civic and educational centres, ring roads, trunk roads, and other improvements in communications. Five members of Parliament represent the city at Westminster. The responsibilities for local gov. rest upon the lord mayor, whose office originated in 1216, and a corporation of 28 aldermen and 84 councillors, representing 28 wards. The pop. is approximately 425,000.

Bristol: 1. Co. in the E. of Rhode Is., U.S.A.; area 24 sq. m. Its cap. and port of entry has the same name, and is situated on Narragansett Bay, on the New York, New Haven, and Hartford railroad. Its pop. is 11,100. There is a fine harbour where shipbuilding is carried on. There are manufs. of rubber, cotton, and woollen goods. It is believed that this part was visited by Norsemen in the year 1000, and to be referred to in certain Icelandic sagas (see ERICSSON, LEIF).

2. Bor. in Bucks co., Pennsylvania, U.S.A., on the Delaware R., 20 m. N.N.E. of Philadelphia. It has aeroplane, carpet, hosiery, worsted, and wall-paper factories. The first settlement was in 1681; incorporated 1720. Pop. 11,800.

3. Tn. of Hartford co., Connecticut, U.S.A., situated 17 m. W.S.W. of Hartford, on the New York, New Haven, and Hartford railroad. It has manufs. of clocks, brass goods, engines, etc. Pop. 30,100.

4. Tn., partly in Sullivan co., Tennessee, and partly in Washington co., Virginia, U.S.A., the boundary between the two states intersecting the tn. It lies 130 m. E.N.E. of Knoxville. Among its institutions are the Presbyterian College for men (1868), and Sullins College and Virginia Intermont College for women. The prin. manufs. are furniture, paper, tobacco, etc. Pop. 14,000.

Bristol Bay, arm of the Behring Sea, lying to the N. of the peninsula of Alaska. Communication with the Interior is opened up for a considerable distance as two large lakes empty themselves into this bay. It is in lat. 57° 30' N., and long. 160° W.

Bristol Channel, inlet of the Atlantic Ocean, situated in the S.W. of England. It has S. Wales to the N., and Devon and Somerset on the S. It forms an extension of the estuary of the Severn. Its length is about 80 m., while its breadth varies from 5 to 43 m. and its depth between 5 and 40 fathoms. It is Britain's largest inlet. Its coast-line is 220 m.

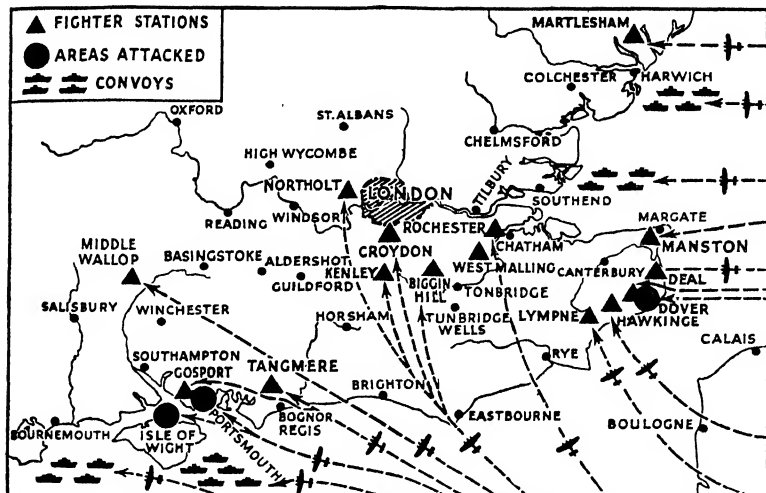
The Rs. Towy, Taff, Usk, Wye, Severn, Avon, Axe, Parret, Taw, and Torridge flow into it. A feature of the channel is its extraordinary tides, which sometimes rise to a height of 35 ft. at King Road at the mouth of the Avon, and even 50 ft. or even more at Chepstow. This violent rise causes the bore, a rush of the tide in the form of a wall of water.

Bristol Porcelain, a hard paste porcelain, containing 'soapy stone' from Lizard Point, Cornwall. It was made, towards the middle of the eighteenth century, at Bristol. It is pure white, semi-transparent, and, in some instances, almost vitrified. Richard Champion produced china table ware, vases, and figure groups, well modelled, highly coloured, and gilded. Wm. Cockworthy, who was the first in England to make porcelain, moved from Plymouth to Bristol in 1770 and Champion, his partner, bought the whole business in 1773. The produce of this factory was known at first as Plymouth China, the true B. P. being the name given to it after 1773.

Britain, Ancient. From the researches of archaeologists we are able to trace inhab. of the is. called B. from a very early age. Traces of Palæolithic and Neolithic man have been discovered, and by the help of geology and archaeology we are able to know the periods, but not the duration of the periods, during which these prehistoric men existed. Palæolithic man inhabited a very different B. from our own, and it was only after the great Ice Age and the beginning of the Neolithic Age that B. assumed the physical appearance which it now has. Both Palæolithic and Neolithic man belonged to a non-Aryan race, and there is a great probability that they were descended from a Turanian stock. The first immigrations of Celtic tribes are those of the Gaels or Goidels, the tribes that gave their language and their customs to Ireland and the N. of Scotland. Probably Neolithic man did not become extinct, but mingled in the course of time with the Goidels, especially in Ireland. The second immigration was that of the Brythones or Britons, tribes that were in possession of the S. and S.E. of the is. when the Romans landed there for the first time. These tribes were probably closely allied to the Celtic tribes of Gaul, and in the similarity of tribe names we may trace a similarity of origin, e.g. Belgæ of S. B. and of Gaul, and the Parisii of modern Lincolnshire and of Gaul. The third of the races which inhabited Great B. and Ireland in Caesar's time were the Ivernians or Hibernians, who must at some time have occupied the whole of the is., but, long before Caesar's time, had been driven westward by the Goidels, and it is doubtful whether they lived anywhere as a separate race except in Ireland and the highlands of Scotland. The discovery of B. belongs, if it belongs to any one, to Pytheas, who, in the fourth century B.C., was sent by the merchants of the Gk. colony of Massalia (Marseilles) to open commercial relations with the N.—although B. as the 'tin is.' had probably been known for some considerable

time. The discovery that it was an is. seems to have been made by Cæcilius Julius Agricola. The invasions of Caesar were carried out with the twofold idea of extending the glory of the Rom. arms and of obtaining some influence over an is. which Caesar regarded as being the centre of the recruiting ground of the insurgents of Gaul. The Rom. invasions and conquest began in reality some 100 years later, under the Emperor Claudius, by the hand of his general, Aulus Plautius, A.D. 43. The conquest was not accomplished without bloodshed, nor yet without a struggle, as witness the massacre at Mona of the Druids, A.D. 60, and the revolt of the Iceni, when one of the four Rom. legions found a grave in B. The conquest assumed better lines under Agricola, and by A.D. 80 may be said to have been accomplished. The Romans, undoubtedly taught the Britons much; they introduced good roads; they built walls to keep back the marauding Pict and sea-rover. They taught the Britons how to build houses, how to make pottery, and how to make weapons and utensils of all descriptions of metal. But the Rom. occupation was almost entirely a military one, and when the Romans departed B. quickly became the prey of the roving tribes of Germany. But that the Brit. actually were so enervated and effeminated as a result of the Rom. conquest and in consequence of their not having had any power themselves has yet to be proved. Although the attacks on B. increased immediately on the departure of the Rom., yet these attacks had been made before. The early settlements of the Eng., which were quite independent of each other, were made about A.D. 449, the date of the landing at Ebbsfleet, Kent, of the Saxon freebooters, Hengist and Horsa. For a century after this fresh hands from the Ger. coast poured into the country, and estab. settlements, especially on the E. and S. coasts. These settlers were three tribes of Eng. race—Jutes, Angles, and Saxons—but, in course of time, they received in this land the common name of A.-S. and Eng. The Britons fought hard for their hearths and homes, and in the W., notably in Cornwall, Devon, and Wales, maintained their independence, and it was in the struggle against Cerdic, founder of Wessex, that the Brit. King Arthur is said to have acquired his fame. See R. C. Collingwood and J. N. L. Myres, *Roman Britain and the English Settlements*, 1937; G. Clark, *Prehistoric England*, 1940; C. Fox, *The Personality of Britain*, 1943; J. and C. Hawkes, *Prehistoric Britain*, 1948; and Council for British Archaeology, *Survey and Policy of Field Research in the Archaeology of Great Britain*, 1948.

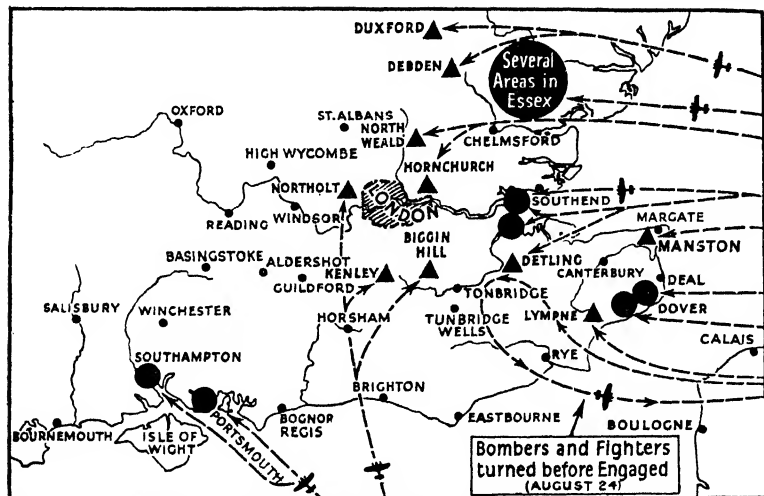
Britain, Battle of. Ger. invasion of Britain by air in Aug.-Oct. 1940. During this battle, absolutely unique in the hist. of mankind, 2375 Ger. aircraft were destroyed, while many others probably met a similar fate, as against the loss of 375 pilots killed and 358 wounded of the Brit. fighter command. During daylight 1700 persons, nearly all civilians, were killed, and 3360 seriously injured, while, at



PHASE 1: AUG. 8-18. GÖRING'S BID FOR TOTAL VICTORY

night, 12,581 were killed and 16,965 injured. The encounters between opposed aircraft often took place more than 3, 4, 5, and sometimes more than 6 m. above the surface of the earth by hundreds of machines flying often over 300 m.p.h. Yet, while this great battle was fought by day, the people went about their business with very little idea of what was happening high above their heads in the fields of air. There was neither sound nor fury, 'only a pattern of white vapour trails, leisurely changing form and shape, traced by a number of tiny specks scintillating like diamonds in the splendid sunlight.' The battle not only brought into clear relief the brilliance and courage of the Brit. airmen, but showed how sound tactics and planning balked the enemy at every turn and prepared the defence for each new move. In this, the greatest air battle of hist., 'the Ger. air force was reduced from a confident smooth-running organisation to a shattered armada' (H. St. G. Saunders, *The Battle of Britain*, 1941). The enemy's avowed object was to end the war before the close of 1940 and, to achieve this, an invasion of Britain was deemed essential. Before the Ger. army could land, however, it was necessary to destroy the Brit. coastal convoys, to sink or immobilise intervening units of the R. N. and, above all, to chase the R.A.F. from the skies. Hence a series of air attacks were launched first on Brit. shipping and ports and then on aerodromes. There were four phases of the battle and, during the final phase, daylight attacks gave way gradually to night raids of increasing intensity. During the first phase (Aug. 8-18) the Ger. sent over

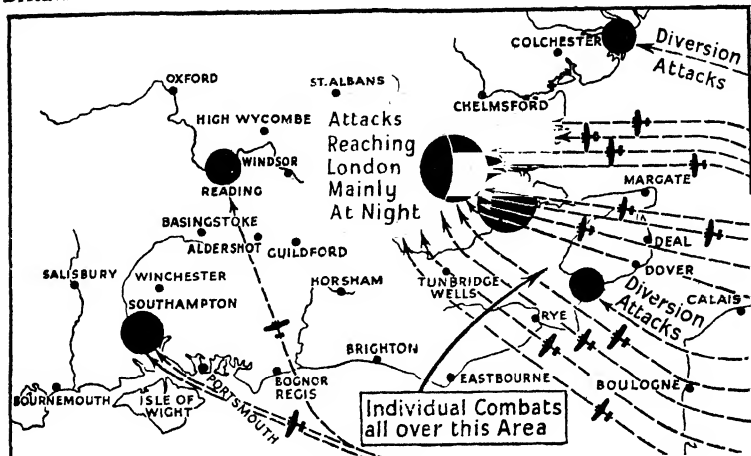
massed formations of bombers, escorted by similar unwieldy formations of fighters flying up to 10,000 ft. above the bombers. Employing these tactics the enemy made twenty-six attacks, first on shipping and S. ports, and lost 182 aircraft. Realising that the Brit. fighter force was stronger than he had imagined, the enemy next attacked fighter aerodromes in S. and S.E. England, while maintaining the attack on coastal tns. Some damage was caused on Aug. 15, but at the cost of 189 Ger. aircraft, making a total of 472 since the opening of the battle. In this first stage the enemy made feint attacks on coastal objectives in the hope of drawing off the Brit. fighters, following these feints soon afterwards with the real attack against ports or aerodromes between Portland and Brighton. Generally these attacks were countered by using half the available squadrons to deal with the Ger. fighters and the rest to attack the bombers. The Brit. fighters' attacks from the stern on the Messerschmitt 109s and 110s were the more effective because these Ger. aircraft were not then armoured. The ratio of loss was about one Brit. to seven Ger. airmen and would have been even more striking had not so much of the fighting taken place over the sea. Then followed a five-day lull, Goering (g.v.) evidently deciding to change his tactics. In the second stage (Aug. 19-Sept. 5) the main Ger. attack was delivered on a wider front, and tactics were changed by increasing the number of escorting fighters and reducing the size of the bomber formations, while the covering fighter screen flew at very great heights. The bomber formations, too, were protected



PHASE 2: AUG. 19–SEPT. 5. THE ATTACKS MOVE INLAND

by a 'box' of fighters, which sometimes broke through the forward screen of Brit. fighter forces by sheer weight of numbers, though only at the cost of numerous casualties. Having thus altered his tactical formations, the enemy proceeded to deliver some thirty-five major attacks between Aug. 24 and Sept. 5, his object being to destroy the inland fighter aerodromes and aircraft factories, while not omitting to drop bombs on purely residential dists. in Kent, the Thames estuary, and Essex. The fighting during this stage cost the Ger. 562 machines, against the Brit. loss of 219 aircraft—but 132 Brit. pilots from these 219 planes were saved. During these twelve days the Brit. tactical divs. were altered, the effect being to cause the enemy to be met in greater strength and further away from the inland objectives, while such of the Ger. aircraft as eluded this forward defence were dealt with by rear squadrons. The fighting efficiency of the Brit. fighter squadrons was put to considerable strain, but the enemy failed entirely to put them out of action, nor were their operations even interrupted. But by Sept. 6 the Ger. either believed that they had achieved success in sufficiently weakening the fighter defence and that it only remained to bomb a defenceless London into surrender, or, following a prearranged plan, they automatically switched their attack against the metropolis and industrial buildings there and in the provinces, as offering targets more easily reached than the fighter aerodromes. This, the third stage of the battle, began on Sept. 7 with a mass attack on London, lasting an hour. The waves of attack con-

sisted of formations of twenty to forty bombers, with an equal number of fighters in close escort, with additional protection by large fighter formations flying at a much greater height. By way of diversion, dive-bombers reappeared in attacks on coastal objectives and shipping. By night single aircraft dropped bombs at random over London. Between the coast and London, usually in the Edenbridge-Tunbridge Wells area, the raiders were met by Brit. Spitfires, which attacked the high-flying fighters, while Brit. Hurricanes, which had taken off first, engaged the fighter escorts, and were followed by other squadrons which fought the bombers. The attack on London was the crux of the battle. It continued from Sept. 7 until Oct. 5 and was the last desperate attempt to win victory. Goering put forth all his strength and, during this phase, thirty-eight major attacks were made by day. On Sept. 7, a force of 350 bombers flew in two waves up the Thames estuary, some penetrating as far as Cambridge. Flames leapt up from various points in dockland. Sov. factories and dock buildings, gas and electricity plants, and railway communications were damaged, but 103 Ger. aircraft were shot down. The enemy, however, persevered with tenacity and courage. On Sept. 11 the Ger. planes which forced a way through the defence were so fiercely mauled by the Brit. fighters that they lost in crews not fewer than 250 men. On Sept. 15 came the climax: 300 Ger. aircraft, 150 in the morning and a like number in the afternoon, fought a running fight with Hurricanes and Spitfires from Hammersmith to Dungeness and from Bow to the Fr. coast. No fewer



PHASE 3: SEPT. 6-OCT. 5. THE LUFTWAFFE LAUNCHED AGAINST LONDON

Diagrams based on illustrations in 'The Battle of Britain,' with permission of the Controller, H.M.S.O.

than 185 wrecked Ger. machines littered S.E. England as the result of this single day's fighting, and so redoubtable were the Brit. fighters that the Ger. pilots could be heard calling out to each other over their wireless telephones: 'Achtung! Schpitfeuer!' Between Sept. 6 and Oct. 5 the total Ger. loss was at least 883 aircraft. In all these major daylight attacks the Ger. fighter escorts steadily increased in numbers, till the ratio was four fighters to one bomber. Often the enemy jettisoned his bombs before reaching his apparent objective as soon as he saw the Brit. fighters. As the autumn wore on and the sky grew more cloudy, the enemy began to make more use of fighters flying very high above the clouds. But the high fighter screens were engaged by pairs of Spitfire squadrons half-way between London and the coast, while wings of Hurricane squadrons attacked the bombers and their escorts before they reached the fighter aerodromes E. and S. of London. Other Brit. squadrons formed a third and inner ring, patrolling above these aerodromes, thus forming a defensive screen to guard the S. approaches to London. Between Sept 11 and Oct. 5, No. 11 Group of Fighter Command alone destroyed 442 Ger. aircraft at the cost of fifty-eight Brit. pilots, giving a ratio of 7.5 enemy to one Brit. pilot lost. By this time the Brit. aerodromes had recovered from the damage inflicted on them and the percentage of intercepted raids increased, as did the enemy casualties, while the Brit. casualties decreased steadily. The final stage of the battle began on Oct. 6. The enemy's strategy and method now changed completely. He withdrew nearly all his long-range bombers and tried to achieve

his end with fighters and fighter bombers—eloquent proof of the hammering his depleted bomber force had received by daylight. He now chose the night and, in increasing numbers, mass fighter formations came at great height in almost continuous waves to attack London, still the prin. target. To enable his large formations to get through, the enemy used the tactics of diversion; but on sighting the Brit. fighters the Ger. fighter bombers often jettisoned their bombs and made off. Brit. tactics were immediately altered so successfully that No. 11 Group accounted for 167 Ger. aircraft in three and a half weeks at a cost of forty-five pilots. The Ger. losses were probably still greater than this, for the fighting took place at so great an altitude that the Brit. pilots were unable to see the ultimate fate of many opponents. By Oct. 31 the B. of B. was over. It did not cease dramatically or suddenly; it just 'petered out.' Bitter experience had at last taught the enemy the cost of daylight attacks. He took to the cover of night. The enemy had paid dearly for his attempt to conquer Britain. It was a great deliverance. The Brit. airmen had turned the tide of world war by their prowess and by their devotion. 'Never in the field of human conflict was so much owed by so many to so few' (Mr. Winston Churchill). But though the Luftwaffe failed to destroy the fighter squadrons of the R.A.F., the situation during the battle was critical in the extreme. Pilots had to be withdrawn from the bomber and coastal commands and from the Fleet Air Arm and flung into the battle after hasty preparation. The majority of the squadrons had been reduced to the status of training units,

and were fit only for operations against unescorted bombers. The indomitable courage of the fighter pilots and the skill of their leaders brought the nation through the crisis, and the morale of the Ger. cracked because of the tremendous losses which they sustained. The lack of flexibility in the training system proved to be the 'bottle-neck' and was the cause of the progressively deteriorating situation of the fighter command up to the end of September. (See H. St. G. Saunders, *The Battle of Britain*, H.M.S.O.; 1941.)

The course of the war during the autumn of 1940 was largely determined by the all-important fact that Germany failed to overwhelm Britain by the use of air power. Such plans for the invasion of Britain as Hitler may have made had now to be postponed and, unless he could redress the situation in the air, the projected invasion might have to be abandoned for good and all. The attacks on air bases, which had been so decisive a preliminary in the Ger. campaigns in Poland and in the Low Countries, had failed utterly against Britain; and not a single aerodrome had been put out of commission for more than a very short time. The failure of the Luftwaffe to overcome the R.A.F. made it impossible to batter the S. ports into chaos and so secure the complete mastery of the Channel. But, though the daylight raids had virtually disappeared, the B. of B. was in effect continued by night; and, thenceforth, every night hundreds of bombers flew in to pour tons of high explosives, first on London and then on the chief provincial towns. Considerable damage was done at times, but accuracy of aim was impossible, even with the aid of flares. A considerable part of the London dock system, with its surrounding warehouses and factories, was destroyed, and in nearly every quarter of the capital shops and houses were demolished and old landmarks obliterated, together with the dislocation for a time of vital services such as gas and electricity and water. But the nerve centre continued to function and public morale remained unimpaired, especially as rapid progress was everywhere made in the construction of air-raid shelters and in the organisation of fire-fighting services. But still there remained the threat of grave damage unless some answer to the night bomber could be found. A partial antidote was sought in the rapid multiplication of anti-aircraft guns, whose tremendous box barrage kept the raiders at a great height and threw them off their course. New methods, too, of prediction contributed to the accuracy of the gun-fire and new combinations of searchlights and anti-aircraft fire were worked out. After the lesson of the attempt by means of incendiaries to set the city on fire on Dec. 28, 1940 (see GREAT BRITAIN, *History*), energetic steps were taken to meet any similar attempt in future by organising fire-watching services. Gradually the use of fighter planes against the night bombers was increased by selecting specially trained pilots and adapting such planes as the Defiant and

Nighthawk to this complex purpose. On the other hand, the Ger. were also gaining experience, and their night raids struck ever harder blows with decreasing numbers of bombers, carrying land-mines and torpedoes; and, guided by cross-beam radio, they could at least reach any given town in Britain. After sev. weeks of this groping, indiscriminate bombing, the enemy at length appreciated the ineffectiveness of their new methods. They treated London as one only of a number of objectives and concentrated their assaults on other towns in turn, excusing, as always since Sept. their bombing of non-military objectives as 'retaliatory raids.' In the Ger. view the audacious bombing of Munich at the moment when Hitler was haranguing his Nazi comrades on the anniversary of the beer-hall *putsch*, provided an appropriate excuse for extreme reprisals on civilians; and, on Nov. 14, a clear moonlight night, Coventry was the chosen victim. Some 500 planes swept in continuous waves throughout the long hours of moonlight and rained over 400 tons of bombs on the heart of the city, dropping loads of high explosives on fires previously started by incendiary bombs. Coventry provided the classic example of indiscriminate bombing, resulting in the destruction of the main shopping centre, disorganising utility services, and demolishing the famous cathedral, but leaving the essential industrial plants but little the worse. This raid inaugurated a series of similar, but rather less damaging, attacks on Britain's chief provincial cities—Birmingham, Liverpool, Southampton, and Bristol suffered frequent hammering, while London periodically experienced mass revisitations. Later Plymouth, Manchester, and Glasgow (the last named particularly in March 1941) sustained considerable loss of life and damage to house property. Yet, in spite of the sore trial of public morale, it was significant that the enemy's raids were confined to this limited scale and that only a single raid of this size was attempted at any one time. It became obvious that the enemy was still not prepared to use more than a fraction of his force nor to use the new types of planes which he had developed. It was equally clear that if the Ger. were holding their real strength in reserve, the Brit. reserve was similarly intact. The ultimate test in the air was still in the future. The direct damage to Britain's war production was less a matter of spectacular destruction than of methodical attrition. None of the essential services broke down, though there were delays in communications, particularly the postal service; while production was retarded somewhat on account of workers being compelled to seek shelter during air-raid warnings—an inconvenience which was greatly mitigated by the employment of roof-spotters. In a total war the disorganisation of civil life was inevitably a part of the Ger. military technique and it is no exaggeration to say that the civilian was in the first line of battle. But far from the morale of the Brit. people being broken,

there were revealed resources of fortitude and cheerfulness and generosity of voluntary effort that were the very essence of the living spirit of democracy, and it was in this spirit, almost as much as on her physical resources, that the survival of Britain continued to rest. See A. Mee, *Nineteen-Forty*, 1941; B. Robertson, *I Saw England*, 1941; 'A Warden,' *Dusk to Dawn*, 1941.

Britain, Great, see GREAT BRITAIN.
Britain, Roman, see BRITAIN, ANCIENT.
Britannia, see BRITAIN, ANCIENT.

Britannia Metal, a white alloy of tin and antimony, a usual formula being tin, 90 per cent; antimony, 7.5 per cent; copper, 1.5 per cent; bismuth, 1 per cent; the last addition increasing the fusibility. Initially used as a substitute for pewter, it is now being rapidly displaced by nickel-silver.

British and Foreign Anti-Slavery Society first met in 1837. Its original president was the celebrated Thomas Clarkson. As its name suggests, it was founded with the object of putting an end to slavery and slave traffic all over the world, and of protecting all who were recently emancipated in any Brit. dominion. The society joined forces in 1909 with the Aborigines Protection Society, which had been founded two years later than itself, the name of the new joint society now being the Anti-Slavery and Aborigines Protection Society. Its present office is 51 Denison House, 296 Vauxhall Bridge Road, London, S.W.

British Academy. The B. A., Burlington Gardens, W., which was incorporated by royal charter in 1902, was founded in order to promote 'the study of the moral and political sciences, including hist., philosophy, law, politics and economics, archaeology and philology.' It is governed by a president and a council of fifteen, who are elected annually from the 100 fellows of the Academy. The many publications of the Academy include the *Proceedings of the British Academy*; *Social and Economic Records*, and the *Schweich Lectures on Biblical Archaeology*, the two last being instituted in 1908; the *Shakespeare Lecture*; *Warton Lecture* on Eng. poetry; *Raleigh Lecture* on hist.; *Philosophical Lecture*; *Master Mind Lecture*; *Lecture on Aspects of Art*; *Italian Lecture*; *Lecture on English Philology and Literary History*. The Academy also offers various prizes, such as the Cromer prize for a Gk. essay, and the Rose Mary Crawshay prize of £100 for research in Eng. literature, which is open to women of any nationality.

British and Foreign Bible Society, see BIBLE SOCIETIES.

British Armies in the World Wars. In the First World War over 6,000,000 men passed through the ranks of the Brit. Armies. The total number of Brit. troops was 8,654,467, made up as follows: Brit. Is., 5,704,416; Canada, 640,886; Australia, 416,809; New Zealand, 220,099; S. Africa, 136,070; India, 1,401,350; crown colonies (including coloured troops from the W. Indies, etc.), 134,837.

Second World War: United Kingdom (mid-1945)—army numbered 1,931,000 (besides A.T.S., 191,000); civil defence, N.F.S., etc., 127,000. Canada—total

enlistments, 788,042. Australia—over 1,000,000 persons enlisted (civil defence workers numbered 300,000, and home guard 98,000). New Zealand sent two divs. overseas. The total enlistments in the S. African forces were 345,049, most of whom served in N. Africa. The Indian Army at its peak was 2,250,000 strong, a volunteer force and an empire record surpassed only by the United Kingdom. Crown colonies also supplied contingents which served in Libya, Burma, etc. For casualties in the Second World War see CASUALTIES.

British Association, association of scientists whose object is to promote the advancement of science in all its branches. It is divided into sev. sections, each of which has its own president and committee members. These sections are A. Mathematics and Physics; B. Chemistry; C. Geology; D. Zoology; E. Geography; F. Economics and Statistics; G. Engineering; H. Anthropology; I. Physiology; K. Botany; L. Educational Science. Its chief founder was Sir David Brewster, though many eminent men of science were associated with its formation. The first meeting was held at York in 1831, when the constitution of the society was decided upon, and in the following year at Oxford various reports were read on subjects previously assigned. The association holds its ann. conference at different places in the United Kingdom and the Brit. overseas dominions, the tn. being determined two years in advance. As long ago as 1884 the B. A. held its conference at Montreal, Canada. It is not customary for the ann. conferences to be held in London, but in different provincial cities, such, for example, as Oxford, 1926; Leeds, 1927; Glasgow, 1928; and Bristol in 1930. An exception was made to this rule when the centenary meeting was held in London in 1931. The time for these ann. gatherings is judiciously chosen, for they fall in Aug. or Sept., when Parliament is not sitting and there is a dearth of news. This assures a more extended report of the proceedings in the general press, and thereby achieves one of the objects of the association, the dissemination of popular knowledge about science. The papers discussed deal with applied as well as pure, or theoretic, science. Thus the sections devoted to engineering, geology, agriculture, and economics often debate matters of commercial interest. A memorable meeting was that at Oxford in 1926, for it was over that conference that the Prince of Wales presided, being the first member of the royal family to follow the precedent of Albert, the prince consort, who, in 1859 occupied the presidential chair. The association has a membership of about 7000, and among other activities makes grants for research. Sir Richard Gregory was president 1940-45. Present president (1948) is Sir Henry Tizard. Office, Burlington House, London.

British Broadcasting Corporation, see under BROADCASTING.

British Central Africa, see NYASALAND PROTECTORATE.

MAXIMUM STRENGTH OF BRITISH ARMIES IN CHIEF THEATRES OF WAR *

<i>Theatre of War</i>	<i>Combatant Strength</i>	<i>Non-Combatant Strength</i>	<i>Total</i>
France and Flanders	1,264,660	782,241	2,046,901
Mesopotamia	168,829	278,702	447,531
Egypt and Palestine	228,927	203,930	432,857
Salonica	137,236	147,785	285,021
Italy	91,102	41,565	132,667
Dardanelles	85,175	42,562	127,737
Totals	1,975,929	1,496,785	3,472,714

* The 'combatant strength' comprises all fighting troops, together with the troops in divisional or base depots. This total does not exhaust the whole Brit. military strength in the war: approximate maxima in other theatres were: Ger. S.W. Africa, 40,000; Ger. E. Africa, 211,525; Togoland and Cameroons, 21,300; N. Russia, 16,187; and Australasia, 4,083. This gives a grand total of 3,765,800.

British Columbia, prov. of Canada. Its boundaries are: Yukon and N.W. Territories on the N.; the U.S.A. on the S.; Pacific Ocean and Alaskan 'pan-handle' on the W.; and prov. of Alberta and Rocky Mts. on the E. Estab. area, including Vancouver Is. and Queen Charlotte group, 366,250 sq. m. Till 1858 the terr., centred in Vancouver Is., was controlled by the Hudson's Bay Company, but the discovery of gold on the Fraser and influx of pop. which followed brought it crown colony status. In 1866 the mainland was similarly created, and on July 20, 1871, the united colonies joined the Canadian Federation. The prov. is remarkable for its physical diversity. Main features are mt. systems trending roughly parallel north-westerly and separating Intermontane valleys, lake-basins, and plateaux. The Rocky Mts. (highest peak, Mt. Robson, 12,972 ft.) flank the E., while the W. is occupied by the Coast Range (highest peak, Mt. Waddington, 13,260 ft.). Between the Rocky Mts. and the Coast Range lies a vast plateau system having elevations of 3000-4000 ft., and cut by deep riv. valleys. Of the numerous rivs. the chief are the Fraser, Columbia (its upper course only), Skeena, Stikine, Peace, Liard, and the Nass. The Fraser, 695 m. long, is navigable by ocean steamships as far as Yale, 102 m. E. of Vancouver. The coast-line is deeply indented with many long and narrow inlets forming excellent harbours. There are sev. well-known passes over the Rockies, including the Kicking Horse Pass and Crow's Nest Pass, used by two branches of the C.P.R. and the Yellowhead Pass, crossed by the C.N.R. The climate is as diverse as the physiography. The prov., spreading over 11 degrees of lat., with an average width of 700 m., has, within its own limits, climates which differ greatly. The littoral region is mild and humid, while the interior valleys and plateaux, with their higher altitude, have colder and drier winters.

On the lower mainland the climate is everywhere conable and mild. Spring

opens early, the summers are warm, and the winters mild and rainy. The pop. was 36,247 in 1871, of whom about 10,000 were whites. In 1947 the pop. was estimated at 1,044,000, of whom about 80 per cent were of Brit. stock. Victoria (Greater) (pop. 87,400), on Vancouver Is., is the cap. Other cities and tns. on the is. are Nanaimo (pop. 6,700), Ladysmith, Duncan, and Port Alberni. The cities on the mainland include New Westminster (pop. 44,300), the old cap., and Vancouver. Vancouver (Greater) was founded in 1886, and has a pop. of 409,900; it is the largest city in the prov., and the third largest in all Canada. It is the W. terminus of the C.P.R., and possesses one of the finest natural harbours in the world. Also on the mainland is Prince Rupert (pop. 15,000), the most northerly city of its size in the dominion. From B. C. six members may be sent to the dominion Senate, while sixteen are entitled to a seat in the Federal House of Commons. The king is represented by a lieutenant-governor appointed by the governor-general in council, and governing with the advice and assistance of a ministry or executive council. He is assisted by a provincial legislature of forty-eight members. The franchise is exercised by all persons, male and female, of full age of twenty-one years, who are Brit. subjects and have resided within the prov. for six months. Education is free and compulsory; there are about eighty high schools and over 1000 elementary schools. The Univ. of B. C., situated near Vancouver, was founded in 1908 and opened in 1914. It is endowed by the provincial Gov. The chief regions of settlement are in the S. part of the prov., on Vancouver Is., and in N. Central B. C. Particularly favoured are the valleys, which radiate southward from the mt. systems, notably Windermere, Kootenay, and the Okanagan, which, together with the Fraser R. valley, constitute probably the most fertile areas in the dominion. In 1930 the prov. became re-possessed of its railway land, and the Peace R. block. The lands,

originally assigned to the dominion Gov. under the terms of confederation, comprise an area forty miles wide across the prov. from E. to W. The Peace R. block is an area of 3,500,000 ac. exceptionally rich in fertility and natural resources. Together they represent many millions of ac. of crown lands within easy distance of transportation and ripe for settlement. Approximately 36,000 sq. m. in the prov. are estimated as available for agriculture, and about 800,000 ac. are cultivated. Fruit-growing, dairying, and mixed farming, together with poultry raising and the cultivation of small fruits, have all regis-

tered remarkable progress in the prov. during the past few years. Other industries are mining, fishing, and lumbering. The mineral wealth of the prov. is very great. The prin. metals won are gold, placer and lode, silver, copper, lead, zinc, and coal. Other deposits include iron, both hematite and magnetite, galena, mercury, platinum, antimony, bismuth, plumbago, mica, and molybdenum, but these deposits are for the most part undeveloped. Numerous salmon canneries are in operation, and cod, halibut, and herring are also taken in great quantities. An industry of recent growth in connection with the fisheries is fish-reduction, and numerous plants are now in operation. The chief industry of the prov. is lumbering. B. C. forests hold the greatest stand of softwood in the Brit. Empire, estimated at approximately 360 billion ft. of saw-timber. Douglas fir, red cedar, spruce, and hemlock are the chief

woods. The prov. is in many respects the most favoured part of Canada, and particularly so in respect of its geographical position. Standing in the same relation to the Pacific Ocean as the United Kingdom does to the Atlantic the prov. is destined to become the great *entrepôt* for trade between the Orient, Australia, and the dominion. Before the Second World War some fifty-four steamship lines made Vancouver their port of call, and the port handled yearly 100,000,000 bushels of wheat for export. The other chief exports are fish, coal, gold, silver, minerals, timber, fruit, pulp, and paper. The prov. is



LAKE OKANAGAN, 'BRITISH COLUMBIA'
Part of the 'Okanagan-Cariboo Trail' near Penticton

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traversed by 5000 m. of railway, and over 20,000 m. of gov.-built roads. The C.P.R. has three main lines in the prov. and the C.N. it. two. Branches connect with the U.S. railway system. The Pacific Great E. railway, owned by the prov., runs through it from N. to S. The Alcan highway runs from Fort St. John, B. C., to the Yukon boundary and thence via Whitehorse and Dawson to Fairbanks in Alaska.

See A. Short and A. G. Doughty, *Canada and its Provinces: British Columbia*, 1914; B. A. Mackelvie, *Early History of British Columbia*, 1926; F. Howay, *British Columbia*, 1928; O. W. Freeman and H. W. Martin, *The Pacific Northwest*, 1942.

British Columbian Pine, see DOUGLAS FIR.

British Commonwealth of Nations, see BRITISH EMPIRE.

British Council was inaugurated in

Nov. 1934 at the instance of the Foreign Office, with the support of other gov. depts., and as the result of representations made to the Gov. by Brit. diplomatic and other missions to foreign countries. Its purpose was and is the diffusion of knowledge about Britain, her institutions, and her achievements in the sciences and the arts. A charter of incorporation was granted to the council in 1940. Under the terms of this charter the above-stated purpose is reaffirmed with special reference to promoting a wider knowledge of the Eng. language abroad and of developing closer cultural relations between the United Kingdom and other countries to the benefit of the Brit. Commonwealth of Nations. The council performs many duties which, in other countries, are normally effected either by direct gov. action or by semi-official bodies aided by gov. subventions. Though it receives voluntary donations, nearly all its funds are derived from a grant voted by Parliament and borne on the Foreign Office vote. Its powers are vested in an executive committee, on which various members of the Gov. have the right each to nominate one member, namely the Lord President of the Council, chancellor of the exchequer, the secretaries of state for foreign affairs, dominion affairs, the colonies and Scotland, the presidents of the Board of Trade and of the Board of Education, and the secretary of the dept. of overseas trade. Among the methods of the council in the promotion of its objects is the formation of new, or the encouragement of existing, Brit. cultural centres abroad, known generally as Brit. Institutes, and these are its most characteristic adjuncts. One of these, the Brit. Institute in Florence, existed long before the establishment of the council, while a similar institute had also been founded in Athens. There are at present thirty-four of these bodies, twenty-five of them in the Near and Middle East. In Latin America the council works in association with some forty local societies. Shortly before the Second World War the B. C. extended its activities to the empire. The first institute under the Brit. flag was opened in Malta in 1938. In 1943 an Institute was opened in the Is. of Gozo. In 1940 the Council began work in Cyprus, where, by 1945, there were five institutes; and in 1941 it opened an institute in Aden, where the women's branch holds Eng. classes for Arab women. At the beginning of 1945 the council took over the Carnegie Library in Trinidad for use as a base to develop a library scheme to serve all the islands of the eastern Caribbean group. The council now has an institute at Accra and a library at Lagos. Gibraltar, too, has been given an institute. The number of adults learning Eng. under its auspices rose from 10,000 in 1940 to over 60,000 in 1944, and the council has also operated in hundreds of schools. About 2,000,000 copies in twelve languages of the council's series of pamphlets, *British Life and Thought*, and the shorter and more popular *Britain Advances*, were sent overseas in 1943-45. The council also issues its

own monthly publications, *Britain Today*, *Monthly Science News*, and *British Medical Bulletin*. Extensive use is made of documentary films produced for the council, which has also estab. libraries of Brit. music, including recordings, in over forty countries. It organises exhibitions of paintings, drawings, and sculpture.

British East Africa, a Brit. equatorial ter., comprising the Kenya Colony and Protectorate, the Uganda Protectorate, the Is. of Zanzibar and Pemba. Kenya Colony and Protectorate were formerly known as the E. Africa Protectorate, but in 1906 the protectorate was placed under the control of a governor and, except the sultan of Zanzibar's dominions, was annexed to the Crown as from July 23, 1920, under the name of 'The Colony of Kenya,' thus becoming a crown colony; while the coast ter. rented from the sultan of Zanzibar was proclaimed as the Kenya Protectorate. The whole region lies between what was It. Somaliland (the precise boundaries being settled by a boundary commission during 1926-27 after the treaty of 1924 by which Great Britain ceded to Italy the Juba R. and a strip of ter. along that riv.), Abyssinia, and the Anglo-Egyptian Sudan and the Indian Ocean on the N. and E., and Tanganyika Ter. (formerly Ger. E. Africa), the Belgian Congo, Ruanda-Urundi, and Fr. Ubangi on the S. and W. The total area is approximately 320,300 sq. m., including 15,000 sq. m. of water in Uganda; and the pop. is about 6,662,000, of whom about 21,000 are Europeans, 60,000 Asiatics (mainly Indians), and about 50,000 Arabs. Both the white and the Indian pop. have increased appreciably in recent years, the latter carrying on a large amount of the retail trade, especially in Kenya. The country is watered by the Upper Nile, the Bahr-el-Ghazal, the Sobat, Tana, and Sabaki Rs. and stands on a high plateau of 3000-4000 ft. The chief lakes, part or all of which are included in the ter., are Victoria, Albert, Albert Edward, Stefanie, and Rudolf. The mineral resources in Kenya are not yet fully explored, but natron, gold, graphite, copper, iron, and manganese are found; but there are no mines in Zanzibar nor in Uganda. Exports include copra, cloves and sisal (Zanzibar), cotton (chiefly Uganda), coffee, hides and skins, ground-nuts, and carbonate of soda. The ter. formerly belonged to the Brit. E. Africa Company, until it came under the Brit. sphere of influence. It was then placed under the immediate control of the Brit. Foreign Office, but in 1905 was taken over by the Colonial Office.

Native Policy and Closer Union.—In considering the future of the E. African dependencies (including in this context Tanganyika Ter.), the Brit. Gov. has paid the closest attention to the questions of native policy and closer union. For the purpose of obtaining guidance on these questions a commission was sent out in 1927 under Sir E. Hilton Young, with the following terms of reference: to make recommendations as to whether by federation or some other form of closer union,

more effective co-operation between the different govts. in Central and E. Africa might be secured, more particularly in regard to transport, customs, research, and defence; to consider which ters. could be brought within any such closer union now or in the future; to make recommendations respecting changes in the powers and composition of the legislative councils in these ters. so as to secure more direct representation of native interests, and, consistently with this desideratum, to suggest how the dual policy (which was recommended by the conference of governors in 1926 and aimed at the complementary development of native and non-native communities) could best be applied. The report of the commission was published in Jan. 1929 (Cd. 3234), and at once commanded lively interest. This was due largely to the fact

of the opportunities open to them.' In a memorandum on the subject presented in June 1930 (Cmd. 3573) the Gov. reaffirmed the declaration of policy incorporated in the Kenya White Paper of 1923 and fully accepted the principle that the relation of the Brit. Gov. to the native pop. in E. Africa is one of trusteeship which cannot be devolved, and from which they cannot be relieved. This principle of trusteeship is regarded as in no way inconsistent with the 'Dual Policy,' because it must be the aim of the administration of every ter. with regard to all the inhab., irrespective of race or religion, to maintain order, to administer justice, and generally to promote the commercial and economic development of the country. The Gov. also accepted fully the declaration of the paramountcy of native interests, and held



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that the commission travelled somewhat outside its terms of reference in giving a 'very full and weighty exposition of the general principles of native policy, not only as regards E. Africa, but as regards the Brit. Empire at large, with particular reference to the principles which should govern the relationships between the native and immigrant races.' (Statement of the conclusions of H.M. Gov., etc., Cmd. 3574.) The report of the commission discusses at length the declaration of the duke of Devonshire (made as colonial secretary in 1923) that 'the interests of the African natives must be paramount, and that if and when those interests and the interests of the immigrant races should conflict, the former should prevail' (Kenya White Paper, 1923, Cmd. 1932). The report expresses the view that the 'paramountcy' of native interests is to be 'interpreted in the sense that the creation and preservation of a field for the full development of native life are a first charge on any ter., and that the Gov., having created this field in the establishment of an organised governmental administration of the modern type, has the duty to devote its energies to assisting the natives to make the best possible use

it to be plainly involved in the trusteeship. In this connection it is to be noted that in the case of Tanganyika Ter. the obligation of the Brit. Gov. is that of a mandatory under the League of Nations (later that of a trustee under the United Nations), and to be exercised in the interests of peoples not yet able to stand by themselves under the strenuous conditions of the modern world. The problem of native policy is, indeed, comparatively simple for that ter., because it is an agreed principle that the mandatory may not exploit mandated ter. The problem is acutest in Kenya Colony, which has reached a higher stage of development than the rest of the ters. in E. Africa under Brit. administration, for Kenya has three times as many European settlers as all the rest of the ters. together, besides which there are far more Asiatics there, as well as some 13,000 Arabs; between all of which diverse elements difficulties must arise, especially over land purchase, and the principle of elective representation as between European and Indian.

In regard to 'closer union,' the Hilton Young commission proposed the appointment of a high commissioner for the whole ter. of Brit. E. Africa and Tanganyika

Ter., with executive power over the individual governors in the matter of native policy and certain services of common interest to all the ters. This high commissioner was, later, to develop into a governor-general, assisted by a central council with power to legislate in respect of services common to all the dependencies, by which stage the other or individual governors would become automatically reduced to the status of Lieutenant-governors. The Gov. sent out Sir Samuel Wilson, the then permanent head of the colonial office, to ascertain what measure of agreement could be obtained locally on the recommendations of the Hilton Young Report. The Wilson Report (Cmd. 3378) represents an attempt to reduce the progressive steps contemplated by the commission to one, by the immediate creation of a high commissioner, who should have legislative and administrative responsibility for certain services and who, as chairman of the governors' conference, would have an advisory function in all matters of common interest. The Brit. Gov. in their statement of conclusions (Cmd. 3574), issued in June 1930, proposed, for the purpose of the social and economic development of the countries concerned, to establish a high commissioner who should act as chief adviser on native and other policy to the secretary of state under royal instructions outlining his special duties and powers. In 1931 a joint committee of the two Houses of Parliament set up by the Gov. administered the *coup de grâce* to the Hilton Young and correlated reports. The committee's report rejected the proposals for making a single administrative unit of all the dependencies and accepted the proved fact that in all of them closer union is more feared than desired. The evidence adduced before the committee demonstrated that there was no sufficient local support for the creation of a high commissioner and common council. They therefore decided in favour of leaving the ters to develop along their own lines, co-operating as far as they could by means of the periodical conference of governors and through the permanent secretariat of that conference. See KENYA, COLONY AND PROTECTORATE; UGANDA; ZANZIBAR. See Lord Lugard, *The Dual Mandate in British Tropical Africa*, 1923; J. Huxley, *Africa View*, 1931; Elspeth Huxley, *White Man's Country*, 1935, and *East Africa*, 1941; H. W. Tilman, *Snow on the Equator*, 1937; R. Coupland, *The Exploitation of East Africa, 1856-90*, 1938.

British Electricity Authority was created under the Electricity Act passed in 1947 to nationalise the electricity industry, the vesting date under the Act being April 1, 1948. The B. E. A. is responsible to the minister of fuel and power for the generation of electric current and for its distribution to 14 area boards, which replaced the supply undertakings throughout the country. It has control of an industry which comprises 541 supply undertakings of which 60 per cent were previously publicly owned and the

remainder owned by companies. In each area board's ter. there is to be a consultative council representing the interests of local authorities and consumers. The supply system is based on 142 prin., and about the same number of secondary, generating stations, with plant of a total capacity of 12,000,000 kw., producing over 40,000,000,000 units a year.

British Empire, or British Commonwealth of Nations. The term B. E., including both self-governing dominions and colonies and also what are loosely called crown colonies and protectorates, may be taken as implying all the ter. the inhab. of which look to the king of Great Britain and Ireland as their ultimate head. Certain ex-Ger. and Turkish ters. since the First World War, administered by Great Britain or by Brit. dominions under a mandate of the now defunct League of Nations, may be said to be included in the B. E. (the mandate for Palestine, however, was given up after the Second World War). The B. E. contains 'a variety of peoples, races, religions, civilisations, cultures, and economic systems, interrelated by as wide a variety of political arrangements. It is governed from various centres. No single parliament gives law, no single ministry issues commands, to all of it. Its sovereignty resides in different caps. spread over the earth. There is no economic exploitation. All its greater units conduct their industry and trade as independent nations pursuing their own interest; all its lesser ones, although under economic directions from Great Britain or one of the dominions, are directed and guided under strict principles which make the prosperity of the dependent country the primary object aimed at. There is no standardised religion or education or political creed. There is not even an enforced supremacy of the Eng. language. Those who feel moved to use it do so, and those pops. who prefer Fr. or Afrikaans, Arabic or Hindustani, find their tongue accorded full official status in law court, Parliament, and press. After such a catalogue of negatives it may be asked: What then is the empire, what is there positive about it? And the answer may well be: A way of life, an outlook on human relationships, an ideal of what government stands for, and a determination that these things are worth dying for. . . . Abstractions, perhaps, but yet convenient summings-up of the countless realities that constitute the daily life of the hundreds of millions of individuals who inhabit the empire's lands' (J. A. Williamson). The extent of the B. E. is conveyed graphically in the hackneyed but none the less true phrase 'the empire upon which the sun never sets', for of the whole area of the land-surface of the globe the B. E. occupies about one-fifth. In fact, of the 52,500,000 sq. m. which is roughly the extent of the land-surface of the earth, the B. E. occupies about 14,435,060 sq. m. (in Europe and Mediterranean, 125,340 sq. m.; in Asia 2,346,000 sq. m.; in Africa, 4,052,000 sq. m.; in N. America, 3,893,000 sq. m.; in Central

America, 8,600 sq. m.; in the W. Indies, 12,300 sq. m.; in S. America, 97,800 sq. m.; and in Oceania, 3,300,000 sq. m.). The empire is fairly evenly divided as between the N. and S. hemispheres, but from the other possible div., i.e. in the E. and W. hemispheres, the greater part of it lies in the E. The empire contains some of the fairest and most productive of all lands in the world; lands that contain great wealth of gold and of precious stones. It has amongst its rivers the largest and the greatest in the world, and part of it is bounded by the greatest chain of mts. in existence. In those parts of the empire where large colonies of white men are to be found, it is seen that the influence of environment is gradually beginning to modify the original race, and colonists may now be known by the differences of type which continuous dwelling in various lands has brought about. It is quite possible now to differentiate between the Canadian and the Cornstalk, the S. African colonist and the Englishman. The is. of New Zealand, however, preserves almost exactly the type of the home Britisher, and the resemblance in climate and characteristic is very great between the two countries. The types of race found in the pop. of the B. E. are many and various. Dividing broadly the pop. of the B. E. into the two divs. of white and coloured, we find that the white pop. numbers, according to recent estimates, about 74,045,500, and the coloured pop. about 465,852,000 (excluding India). Some estimates put the total coloured pop. at 500,000,000. These are distributed as follows: Whites (mainly A.S.)—Great Britain and N. Ireland, 48,105,000; Canada, 11,507,000; Australia, 7,307,000; S. Africa, 2,035,000; New Zealand, 1,574,000; S. Rhodesia, 83,000; India, 306,500 (European and allied races, of which 138,400 are Anglo-Indians); colonies 128,000. It is obvious from this last figure, which covers the white pop. scattered in a colonial empire containing over 60,000,000 natives, that the tropical colonies are not suited to white folk and the only considerable white communities are those in N. Rhodesia, Jamaica, and Kenya (apart from Gibraltar, which is essentially a garrison pop.). These are naturally closer estimates than are possible for the native, or coloured, pop., which appear to be distributed as follows: India, 388,998,000; Ceylon (now a dominion) with E. colonies, 14,098,000; Africa, S., 7,874,000, E., 21,774,000; W., 25,567,000; the W. Indies, 2,500,000; Australasia and Pacific Is., 1,312,000; and Canada 199,000. The pop. therefore of the B. E. is probably about one-quarter of that of the entire globe. The prin. divs. of the B. E. are Great Britain, Canada, and Newfoundland, Australia, New Zealand, S. Africa, India, Pakistan, and Ceylon, all of which are self-governing dominions. Great Britain is, of course, the mother country; the Irish Free State (now called Eire) was separated from it and created a dominion in 1922. But Eire did not regard itself as a dominion, and only

acknowledges the Brit. connection for certain very restricted purposes, and in Nov. 1948 the Eire Gov., by introducing the Republic of Ireland Bill, took steps to remove the last vestige of Eire's constitutional partnership in the Commonwealth, though the Brit. Gov. declared that they would not regard the enactment of this legislation as placing Eire and its citizens in the category of foreigners (*see EIRE.—History*). India, until the Second World War, was an empire, ruled over by a king-emperor, the king of England. It was, however, the aspiration of certain leaders of the Indian people that India should be accorded 'dominion status,' and the Government of India Act (1935) was a milestone on the road to this goal which, after the Second World War, hardened into a demand for independence. This aspiration has in effect been fulfilled, though at the moment (1948) both India and Pakistan are, *de jure*, dominions and are so regarded by the Brit. Commonwealth Relations Office (until July 1947 styled the Dominions Office). Next to the dominions come the colonies, which are divided into self-governing colonies or dependencies, enjoying varying degrees of autonomy, and crown colonies (*q.v.*), foremost among them being N. and S. Rhodesia (this latter is really a self-governing colony approximating to dominion status, but certain matters, especially those relating to native policy, are reserved to the Crown), and Nigeria, in Africa; Jamaica, in the W. Indies; and Hong Kong in Asia; and in the Mediterranean Sea, Gibraltar, Malta, and Cyprus. Protectorates are estab. over certain 'backward' communities ruled over by native sovereigns or chiefs, such, for example, as Uganda and Zanzibar, in Africa; Brit. Malaya, in Asia; and the Tonga Is., in Oceania. The most important of the protectorates of the B. E., Egypt, has recently been created again a sovereign independent state. There are many dependencies and isolated is. in the empire, some of the latter without inhab. The Sudan is a condominium administered jointly by the representatives of the Brit. and Egyptian Govs., under a Brit. governor-general (*see further SUDAN, ANGLO-EGYPTIAN*). After the First World War additions to the Brit. Commonwealth of Nations were made by the creation, through the allied and associated powers, of ex-Ger. and ex-Turkish ters., administered under mandate on behalf of the League of Nations. Among these were Palestine, Iraq, and Tanganyika Ter.; but only the mandate for Tanganyika now remains. The Arab and Jewish inhab. of Palestine, however, were not Brit. subjects, but Palestinians, and the indigenous races of Tanganyika, like those of Somaliland, are 'Brit. protected persons.' Some of the mandates under the treaty of Versailles (1919) are administered by the dominions. Thus the Union of S. Africa is the mandatory for the former Ger. S. W. Africa colony, Australia holds the mandate for New Guinea, and New Zealand holds a mandate for certain former colonies of Germany in the S.

Pacific. Details of the various forms of gov. of all these ters. will be found in the articles dealing with the separate ters.

Races.—As may be imagined, in an empire comprising one-fourth of the earth's inhab. and one-fifth of its land area every kind of race and colour is to be found. The vast majority of the natives of India are of Aryan stock, being of a high type that approaches the white. There are, however, many descendants of the Dravidians (*q.v.*), whom the Aryans overcame on their descent into India three or four milleniums ago. In Ceylon are to be found the Sinhalese and Tamils, both of anct. culture. The Malay states have a brown pop., with nearly as many Chinese, the latter being immigrants of comparatively recent times. In S. Africa the aboriginal Bushmen and the Hottentots are still to be found, though in greatly diminishing numbers, the bulk of the native races belonging to the Bantu stock. These Bantus, or Kaffirs, are dark-skinned negroids, divided into many tribes, such as Zulus in Natal, Matabeles and Mashonas in Rhodesia; and there is a growing element, in the union, as also in Brit. E. Africa, of Asiatic (chiefly Indian) immigrants. Central Africa is the home of the most primitive of the negro types, but there is an admixture of Arab blood in some races, producing a lighter-skinned type. The W. Indies are peopled chiefly by the descendants of negro slaves, brought from Africa, though some of the original race of Caribs are still to be found. In Jamaica, the largest of the Brit. W. Indian is., there is a large number of half-castes or creoles, the descendants of whites and negroes. There are Red Indians of Canada, though few in number, and in the N. of that ter. are to be found the Eskimos, a Mongoloid folk. The lowest grade of native civilisation is to be found in Australia, where the 'black boys' are a primitive pre-Dravidian race, rapidly disappearing through their inability to adapt themselves to the customs of the whites. The natives (Maoris) of New Zealand, of Polynesian origin, are, on the other hand, entirely adaptable and are increasing. The Pacific Is. are inhabited by both the highest and lowest types of primitives, the latter still probably including many cannibals.

British Nationality.—The British Nationality Act, 1948, provides a new method of giving effect to the principle that 'the people of each self-governing country within the Brit. Commonwealth have both a particular status as citizens of their own country and a common status as members of the Commonwealth.' Under a common clause accepted by all the Commonwealth countries (except Eire) all persons recognised as Brit. subjects in any part of the Commonwealth are recognised as such throughout the whole of it. *See further under NATIONALITY ACT, BRITISH (1948).*

Religions.—All the important religions of mankind are to be found in the B. E., together with the lowest sort of fetish worship. The white inhab. are for the

most part Christians of the Protestant persuasion, Rom. Catholics being in Ireland, Quebec (the French Canadians), and among Irish and European emigrants in Canada and Australia. It is sometimes pointed out that the king rules over more Muslims than Christians; these are mainly in the African and Asiatic ters., particularly India, where Islam numbers the most adherents after Hinduism. Buddhism flourishes in Burma (since 1947 an independent sovereign republic outside the Brit. Commonwealth of Nations) and Ceylon, having almost died out in the land of its birth, India. The larger part of the African natives are pagans, but are adopting Christianity and Islam (particularly the latter) in increasing numbers. The spirit of Brit. rule is, of course, toleration of all faiths.

History.—The B. E. owes its origin not to any excess of pugnacity or acquisitiveness in the Brit. nation, but to the fact that the Brit. are a trading people. The empire grew with the development of overseas trade, and though there is an element of truth in the old maxim that 'trade follows the flag,' the flag—that is, the Army and the administrator—has not seldom followed the trader and, sometimes, the missionary. At the opening of the period of overseas trading in 1583 England acquired its first colony, Newfoundland, of which possession was taken by Sir Humphrey Gilbert, and thereafter settlement overseas for trading purposes or the development of plantations was of frequent occurrence.

The B. E. or C. of N. 'has been built up not by Brit. govts. following a logical and coherent plan, but by Brit. individuals. More often than not their initiative pushed the gov. of the day into commitments which it viewed without enthusiasm and sometimes with positive distaste. A merchant or a manufacturer pushed ahead because he hoped for new markets and new sources of raw materials; a missionary or an administrator on the spot pressed for an extension of the Pax Britannica in order to be able to stamp out chronic disorder, oppression, and barbarous customs; and a settler, struggling to make a living by taming a wilderness, demanded the protection of the Union Jack. On the other hand, civil servants and Cabinet ministers at home with few exceptions shrank from territorial expansions which, from their point of view, entailed fresh problems, new defence burdens, and troublesome debates in Parliament. . . . The motives which impelled individual pioneers to spread out from the Brit. Is. were as various as their individual temperaments. Their motives can broadly be classified under three heads: the desire to make money by an expanded commerce, the desire to escape religious restrictions for a wider life by creating a new home overseas, and the desire of the Christian missionary to spread the gospel. This last did not become an important incentive among the Brit. folk until the nineteenth century, when the revitalising of religious conviction began to widen and deepen the range of the nation's

conscience both in domestic and imperial affairs" (Prof. Vincent Harlow).

The colonies of Great Britain fall roughly into two groups, the large producing ters, such as Ceylon, Nigeria, and Brit. Malaya (the dominions are of course still larger producing ters., but they are no longer 'colonies' in any sense), and the smaller colonies, which serve or have served as the stepping-stones between the homeland and its colonies. These smaller links of empire are the coaling station, the cable or wireless station, and the naval harbour for the ships protecting the trade route against enemy craft, privateers, or pirates. Gibraltar, Aden, Malta, and Bermuda afford instances of such links, and these may also be valuable as air bases. Even before the days of steam as a motive power for ships and of cables for commerce, there was the need—greater, indeed, than now—for the trading vessels to call at friendly ports for supplies of food and water. Wherever, therefore, one finds a well-established Brit. trade route one finds these smaller linking colonies. The three prin. trade routes are: (1) to the E., via the Mediterranean; (2) to the New World; and (3) to the Antipodes. Until the opening of the Suez Canal, the route to India and the Far E. was via the Cape of Good Hope. The Brit. colonies on these sev. routes, with the dates on which they passed into Brit. possession or control, are as follows: (1) To the E., via the Mediterranean and Red Seas: Gibraltar (1704); Malta (1814) (recognised as part of the B. E.); Cyprus (1878); Egypt (now independent) (1882); Aden (1839); Ceylon (1796); Straits Settlements (1786-1846) (Penang ceded in 1786; Singapore, purchased 1819; Malacca, ceded in 1824; Labuan ceded in 1846); and Hong Kong (1841). (2) To the New World: the main part of the W. Indies, in the first half of the seventeenth century, and Jamaica (1655); Trinidad (1797); and Falkland Is. (1764). (3) To the Antipodes and the former route to India via the Cape: Sierra Leone (1787); Gold Coast—a small company gained a footing in the eighteenth century; Gov. first assumed control in 1821, but withdrew and resumed control in 1850; St. Helena (1659); Ascension and Tristan da Cunha (1815); Cape Colony (1806); Mauritius (1810); Seychelles (1794); and then on to the Far E. by the older route first mentioned. As for the larger ters., or those which are now no longer called colonies but self-governing dominions, their acquisition (or loss, as in the case of the U.S.A.) was naturally a longer process. India was conquered largely in the latter part of the eighteenth and the first half of the nineteenth century, mainly through military operations against Fr. rivals for settlement, the conquest of Burma, in further India, being completed in 1882. Canada was in the main settled in the nineteenth century, though the provs. of Ontario and Quebec were conquered in 1759. Australia and New Zealand were settled in the first half of the nineteenth century; S. Africa was part settled and part conquered in the

period 1850-1900; and other of the African colonies were acquired during the 'scramble for Africa' in the seventies and eighties of last century. Certain ex-Ger. and ex-Turkish ters., as already noted, have not been annexed, but are administered under mandate from the League of Nations. Ger. S.W. Africa, however, is administered as an integral portion of the union.

The foregoing is a brief account of how the greater part of the B. E. came to be acquired. It is important, however, in considering the empire as an entity, to remember that it is an organism, and that side by side with the processes of growth are to be found the tendencies to decay. If an empire is to grow, or even to maintain its position, the forces of growth must be stronger than those making for disruption. A unifying imperial sentiment and theory may be traced since 1783, when the Amer. colonies were finally lost, from the early nineteenth-century mixture of humanitarianism and commercial zeal; through the pessimism of the middle of the century, when it was popularly held that the empire was on the verge of breaking up; to the outburst of imperialist fervour under the influence of Cecil Rhodes and Joseph Chamberlain at the end of the century, and the sobering shock of the S. African war; followed by the growth of dominion status (*q.v.*); encouraged by the comradeship of the First World War, and culminating in the Statute of Westminster, 1931. But among the material things that have served to keep the B. E. united are advances in science as applied to transport and communication. The steamship, the railways (notably the Canadian Pacific), the telegraph cable of the nineteenth century, and the aeroplane, radiotelegraphy, and radiotelephony (including broadcasting) in this century have all played their part in the process of consolidation. The wide range of modern newspapers and news services is also a unifying factor. On the other hand, various inevitable developments tend to operate against empire unity. There has been, particularly since the First World War, an awakening or emphasising of racial consciousness, a craving for political expression in self-governing legislative and executive bodies—in a word, the demand for self-determination (*q.v.*). (See NATIONALISM.) It is not only the native who makes this demand, but the Britisher living abroad, whether in a great self-governing dominion, where he is to be found claiming the right to appoint his own governor-general, as Australia did in the case of Sir Isaac Isaacs in 1931, or in crown colonies, where he strives after an ever higher degree of autonomy (see, for example, under CEYLON and MALTA).

Trade and Finance.—Despite the industrialisation of the empire—Canada, *e.g.*, is now the fifth largest manufacturing nation of the world—there is no doubt that since the First World War Great Britain's trade with the overseas empire has grown at the same time that her trade

with other countries has declined—a process which was enhanced by the Ottawa Agreements (*q.v.*) of 1932. Among the minor causes that have contributed to this are the establishment during the First World War of the Department of Overseas Trade and, since that war, of the now defunct Empire Marketing Board (*q.v.*). Besides the trade between the colonies and the homeland, there is a growing direct trade between dominion and dominion, while certain dominions (particularly Canada with the U.S.A.) do a large direct trade with their neighbours. The share held by Great Britain's exports in foreign markets, as distinct from those of the empire, amounted (before the Second World War) on the average to about 20 per cent, but her share of the empire markets was more than twice that amount. In the four years, 1910–13, immediately prior to the First World War the production of Brit. exports taken by the empire was about 35 per cent, but in 1926 this figure was about 10 per cent higher. Again, of the imports into Great Britain, those from the empire have risen in the last seventy years from 22 per cent of the whole to 30 per cent. In 1938 the value of Brit. merchandise consigned to empire countries or dependencies was £234,816,000, as against only £11,470,000 foreign and colonial. The dominions and colonies all seek to protect their nascent industries by tariffs, even against the goods of the mother country and of each other, though in nearly all cases they grant a preference to such goods, as against those of other countries. A notable exception is that part of the African colonial empire covered by the Congo basin treaties (Kenya, Uganda, etc.), in which provide for absolute equality of treatment for the imports of all nations. In the same way that the dominions and one or two of the self-governing colonies have fiscal autonomy, they also have the power to borrow in the home or other countries. Before 1914 practically all colonial loans were floated on the London market, but after 1918 the U.S.A., having passed from a debtor to a creditor nation, received applications from various dominions, and state and industrial loans were secured from the New York money market. This process has gone far in Canada, for in 1926 it was estimated that of the foreign capital invested in that dominion the share of the U.S.A. was three parts to two parts of Great Britain. On the other hand, that great dominion has since entered the money market herself and made investments overseas, particularly in the W. Indies and Latin America. After the First World War Australia was a frequent borrower, as the country was rapidly developing and the needs of the war were large. The aggregate debt of the commonwealth and of the federal state before the Second World War much exceeded the pre-1914 national debt of Great Britain, though more than half of this was raised in the commonwealth itself. In 1930 an economic crisis occurred in Australia, and an effort was made to

restrict the policy of too frequent recourse to borrowing. New Zealand also has been a frequent applicant for the assistance of the London loan market. The S. African Union, which produces the bulk of the world's gold, is also a frequent borrower in London, where the union's loans have a good reputation. In this dominion a central reserve bank was estab. in 1921, a precedent which was followed by the Labour Gov. in New Zealand in 1938. India, in 1926, adopted a definite gold standard with the rupee fixed at 1s. 6d., as against the 1s. 4d. ruling before the First World War. India has borrowed much from the London market, but with the rapid industrialisation of the country, has provided funds for her own industries. So far as the Crown colonies are concerned, the policy of the home gov. has been to encourage development loans as a means of promoting trade to relieve exceptional unemployment. Thus colonies such as Kenya and Nigeria have benefited by the fructifying influence of London's gold. Under the Colonial Development and Welfare Act, 1940, ann. sums of £5,000,000 for development and £500,000 for research in the Crown colonies were made available for ten years from 1941. An Act passed in 1945 extended the grant period to 1956, doubled the rate of expenditure, and abolished the practice of surrendering the unexpended portion of the ann. grant to the Brit. Treasury.

Communications.—Closely allied with trade and finance is the question of communications. These have been greatly strengthened in the last three or four decades, and particularly since the two world wars. To the older modest forms of transport and communication by steamer, railway, and cable have been added the air-line and radio telegraphy and telephony. There has been a distinct tendency in recent years to restrict the construction of new railway lines, and to concentrate on good roads for motor traffic. The motor is opening up the empire at a quicker rate than was the case when reliance was placed chiefly on railways. The sea, of course, remains the most important highway of Imperial communication. In the post-1918 period both Canada and Australia experimented with state-owned merchant services, but these fleets were disposed of to private interests. Since 1920 an Imperial shipping committee has done much to co-ordinate the regulation of shipping throughout the B. E. In railway development the construction of the transcontinental railway in Australia, crossing that continent from N. to S., has been the outstanding achievement of recent years. Frequent air services in both directions between England, India, and Australia bring these countries within a week's distance of each other. Services covering the whole length of Africa and across the N. Atlantic to Canada are also in operation. These air services are at present supported by subventions from the home and dominion govts. In the last twenty years great progress has been made in linking the

empire by wireless, or radio, telegraphy, and telephony, competition between the newer form of communication and the older one of cables doing much to reduce cable rates. The pressure of this competition on the cable companies, combined with a feeling on the part of the home and dominion govts. that it was not wise to rely exclusively on one or the other form of communication, led to the estab. of a great cable and wireless merger, the International and Imperial Communications Ltd., which operates both forms, and which by the economies secured has, despite monopoly, kept both cable and wireless tariffs on a low level. Broadcasting, on short-wave lengths, has put Great Britain and her furthest dominions literally on speaking terms with each other, and done much to strengthen the ties of sentiment which unite the motherland with her most remote colonial possessions.

Defence.—The problem of defence of the B. E. has naturally varied throughout the hist. of the empire. Perhaps the most striking departure in the early years of the twentieth century was when the dominions assumed the responsibility of protecting their own coasts and commerce by their own navies. The Act enabling them to do this is, it is true, dated 1865, but marked developments in this direction have taken place only in the last three decades. Australia in particular now has a fine navy and sea-going vessels which rendered much assistance in the two world wars. Canada's navy, estab. in 1910, to-day (1949) comprises over 500 vessels, including 2 modern cruisers, a light fleet carrier (with associated air squadrons), 12 destroyers, 18 frigates, 11 fleet minesweepers, 2 mine-layers, 1 surveying vessel, with a second light fleet carrier and a destroyer under construction. Even where a dominion or colony or group of colonies does not maintain its own naval units, it contributes money to the common defence of the empire. So small a group of colonies as the Malay States in 1916 contributed money enough to build a first-class battleship, named, after them, the *Malaya*. One of the major problems of empire, defence centred on the question whether Singapore should become a naval base, and this question was settled in the affirmative (see SINGAPORE BASE). In the First World War the whole empire played its part, the dominions and India contributing not only money, but also their manhood to the great struggle. As a corollary to this active participation in the war, the dominions and India were represented at the peace conferences, and afterwards played their part as separate states in the Assembly and on the Council of the League of Nations, and in the United Nations Assembly. Compulsory military training of their young manhood is now a part of the policy of all the dominions excepting Canada. Since 1922 Eire has had its own military force, and can, if it so chooses, have its own navy. Equally, in the Second World War, the dominions (Eire remained neutral) all

played a most prominent part, on land, on the sea, and in the air, and no less striking was their effort in the field of production. Writing on the vital necessity of the preservation of the B. E. to America, Prof. Yandell Elliott said: 'The raw materials on which our industrial salvation desperately depended come in the main from areas that we must protect, through the ability to protect not only S. America, but S. Africa and the Indian Ocean. That is what makes the war effort of Australia, the war effort of New Zealand, the war effort of Canada, the dogged holding of the United Kingdom through slow starvation and imminent peril of invasion, essential to any Amer. safety at the present time (1943) and more than essential to any ultimate victory.'—*The British Commonwealth at War*, ed. by William Yandell Elliott and Duncan Hall (Bureau of International Research, Harvard College and Radcliffe College, 1943). See also under History sections of AUSTRALIA, CANADA, etc.

Collaboration in Imperial Defence.—A central organisation for defence was elaborated through the committee of Imperial defence, following the report in 1904 of Lord Esher's War Office (Reconstitution) committee. This committee was abolished after the Second World War, when a defence ministry was created to discharge, *inter alia*, the tasks carried out before the war by the committee. Methods of collaboration between the various members of the commonwealth are governed by the principle enunciated in the Statute of Westminster (1931). Though the dominions have a close interest in problems that affect the commonwealth and empire as a whole, each of them has a special and distinct outlook on world affairs, dependent on its geographical position and its political and economic environment, and dominion govts. must retain full liberty of action. Co-operation in commonwealth defence has, therefore, always taken the practical form of promoting uniformity of organisation, training, and equipment, and maintaining close touch between staffs and interchanging officers in order to promote a common doctrine and outlook in military affairs. Collaboration in wartime between the forces from different parts of the commonwealth has thus been easy and effective. During the Second World War no attempt was made to revive the Imperial War Cabinet of 1917-18, but this did not prevent the maintenance of a very close touch between the govts. of the commonwealth and the making of common plans for military action and co-ordination of munitions production. After the war the United Kingdom Gov. proposed that there should be estab., in the caps. of each of the dominions, United Kingdom liaison officers who might join with the dominion chiefs of staff in studying regional security problems. In 1947 Canada and the U.S.A. concluded a defence agreement which closely paralleled the procedure which has long been applied between the nations of the Brit. Commonwealth (interchange of individual officers,

systematic exchange of observers, standardisation of arms and equipment, and availability of military, naval, and air facilities). The broad trend of modern geographical developments is bringing these two countries into a relation of peculiar intimacy, for which it is not possible at present to assign limits. This trend will increasingly differentiate Canada's situation from that of the other nations within the Brit. Commonwealth. Retaining commonwealth links, Canada may continue to play from time to time a useful part as mediator between Washington and London, but it may well be true to say that she can less and less be regarded as a typical member of the

of the lines of communication between the different parts of the empire.

Government.—From the foregoing it will have been seen that for the larger part the empire is self-governed, though there is naturally a wide difference between the degree of autonomy enjoyed by a dominion and that accorded to a self-governing colony like, for instance, S. Rhodesia. In times of crisis all or most of the units of the B. E. make common cause, as was shown in the war of 1939. This is facilitated by the consultative machinery of the empire. The king is the symbol of the unity of the empire, and the smaller colonies and ters. are ruled by governors and administrators ap-



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commonwealth. The other members, not sheltered by America's co-operation, may need Britain's more than she does, and her known disinclination to extend the scope of the imperial connection should not operate as a veto upon their doing so, if any of them wish. But there are two great weaknesses in the commonwealth as it now functions. One is the provision, tacitly accepted by the imperial conference of 1926, whereby the whole cost of defending its main highways of communication devolves on Great Britain alone. The other is the absence of any adequate machinery for securing effective commonwealth co-operation in the field of diplomacy. And though in both the world wars the dominions played an ungrudging and most valuable part, it was otherwise between the wars. For the defence of the colonial empire the United Kingdom Gov. is directly responsible. The security of the colonies rests mainly upon the maintenance by the imperial forces of command of the sea and air approaches and of the freedom

polited by the home gov., functioning through the Colonial Office, at the head of which is the secretary of state for the colonies. This official is always a member of the Brit. Cabinet, and until 1925 both 'dominion affairs' and the colonies were the concern of his dept. In July of that year, however, a new secretary of state for dominion affairs was created and a Dominions Office was estab. This took over from the Colonial Office business connected with the self-governing dominions (which, since 1922, included the Irish Free State). For a while the post of dominions secretary was also held by the colonial secretary, but in 1930 a separate minister was appointed for the former Office. Among the duties of the Dominions office is the transacting of business arising out of the imperial conference. This conference was constituted by a resolution of the colonial conference of 1907. There had been four colonial conferences prior to that of 1907, the first taking place in 1887 on the occasion of Queen Victoria's jubilee. The conference of 1907

expressed the opinion that a 'conference, to be called the Imperial Conference (q.v.), should be held every four years, at which questions of common interest might be discussed and considered' as between the home and dominions govts. At the Imperial Conference held during the war, in 1917, it was decided to admit India to these conferences in future, and, as already set forth, on the Irish Free State becoming a dominion, that country was automatically included, being first represented in 1923 (but excluded from the Ottawa economic conference, 1932). During the First World War an *ad hoc* imperial war Cabinet came into being for the prosecution of the war, but this

governor-general in a dominion was defined as a representative of the Crown and not the representative or agent of H.M. Gov. in Great Britain. It was decided, therefore, that in future the reorganised official channel of communications should be between gov. and gov. direct. As a result of this conference on the operation of dominion legislation of 1929 the Statute of Westminster was passed in 1931. The dominions had fought in the First World War as mature nations, they signed the peace treaties as independent states, and their position as such, 'equal in status, though united by a common allegiance to the Crown,' had been regularised by successive transactions, and



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precedent was not followed in the Second World War, though there was a constant interchange of ministerial visits between London and the dominion caps. Of the post-1918 conferences, that of 1926 was most important for the future of inter-imperial relations. A committee of the conference appointed to consider this matter prepared a report, which was unanimously adopted by the conference, enunciating certain general principles for governing the relations between the various parts of the empire, equality of status being the root principle so far as the dominions and Great Britain were concerned. These freely associated members of the Brit. Commonwealth of Nations, though united by a common allegiance to the Crown, were declared to be in no way subordinate one to another. The conference laid down rules governing the mode of communication between gov. and gov., and altered the status of governors and governors-general. The Colonial Laws Validity Act of 1865 was further weakened by these decisions. The

these culminated in the statute, which, however, was in the main merely declaratory of long-established practice (for the subsequent use made of the statute by the dominions, see especially on the status bills and flag disputes in S. Africa, SOUTH AFRICA, *History*; and EIRE). Since the passage of the Statute of Westminster much facile generalisation has been spoken about the United Kingdom and the dominions as though they had evolved a final and perfect solution to the problem of maintaining unity of action in a team of sovereign states: 'It is true that the association has stood the test of two world wars and that the dominions (excepting Eire), alone of the nations of the earth, threw themselves into the war against Germany, unimpelled by the menace of direct attack; but it is also true that, as Prof. Brogan has put it, even dominion status is as much an evasion as a solution of the problem of the evolution of colonies into nations' (Prof. Vincent Harlow). In recent years the United Kingdom has appointed high commissioners in each of

the dominion caps., their functions being largely of a diplomatic character. Some of the dominion govs. have also appointed their own envoys in various foreign caps. and in each other's caps. Thus the sovereign independent status of the dominions has become accentuated, an evolutionary development which might seem to point to the disintegration of the B. E. as such; but it is probably true to say that loyal sentiment still plays the dominant part in holding the empire together—as was strikingly exemplified when the European War of 1939 broke out and all the dominions promptly declared war on Germany. While it is impossible to see the shape of the post-war world in its entirety, it is obvious that the Brit. Commonwealth, tested in the ordeal of two world wars, can form a 'core of stability,' and, in association with the U.S.A. and the nations of W. Europe, can lay the foundations of a system which should make future aggression highly improbable and promote equality of opportunity for all peoples, large and small. The measures which the constituent parts of the Commonwealth may take to ensure their own cohesion—itself an essential factor in constructing the larger framework—will primarily depend on the extent to which each member of the Brit. combination understands the problems, characteristics, and circumstances of its fellow members. On the economic side of Commonwealth relations there has never been an attempt to create a closed economy or economic autarky either between the United Kingdom and the dominions or including the Colonial Empire; for, apart from the fact that any such attempt would have been contrary to the general trend of Commonwealth development, it would not even have been economically practicable.

Bibliography. Among a great many works on the hist., development, and spirit of the Brit. Empire as a whole the following are conspicuous.—**HISTORY:** *Cambridge History of the British Empire*, ed. by J. H. Rose, A. P. Newton, and E. A. Benians (8 vols.), the standard comprehensive work of reference (vol. 1., *The Old Empire from the Beginnings to 1783*, 1929; vol. II., *The New Empire, 1783-1870*, 1940; vol. III., *The Empire Commonwealth, 1870-1921* (projected); the remaining vols. are on the dominions and India); W. Woodward, *A Short History of the Expansion of the British Empire, 1500-1930*, 1899 (revised 1931); Ramsay Muir, *A Short History of the British Commonwealth* (vol. 1., *The Islands and the First Empire (to 1763)*; vol. II., *The Modern Commonwealth, 1763-1919*), 1922; Sir Charles Lucas, *The Story of the Empire*, 1924, being vol. I. of a 12-vol. survey of the Brit. Empire produced in connection with the educational side of the Brit. Empire Exhibition of 1924; Basil Williams, *The British Empire*, 1928 (revised 1944) (Home Univ. series); D. C. Somervell, *The British Empire* (background of elementary knowledge, mainly on the dominions), 1930; Sir John Marriot, *The Evolution of the British Empire and*

Commonwealth, 1939; A. P. Newton, *A Hundred Years of the British Empire*, 1940; P. Knaplund, *The British Empire, 1815-1939*, 1942 (mainly on the dominions and India but with chapters on the W. Indies); J. A. Williamson, *A Short History of British Expansion* (vol. 1., *The Old Colonial Empire*, and vol. II., *The Modern Empire and Commonwealth*, 2nd ed. 1930 and 3rd ed. vol. II., 1945, a leading advanced textbook on the hist. of the commonwealth and empire); H. Bolitho, *The British Empire*, 1948. **POLITICAL, SOCIAL, AND ECONOMIC DEVELOPMENT:** A. P. Newton and J. Ewing, *The British Empire since 1783*, 1929; A. P. Newton, *The British Empire in 1783*, 1935; Ramsay Muir, *The British Empire: how it grew and how it works* (pamphlet), 1940; Ernest Barker, *Ideas and Ideals of the British Empire*, 1941. **STRUCTURE AND PROBLEMS:** *The British Empire: a Report on its Structure and Problems* (Royal Institute of International Affairs), 1937; Eric A. Walker, *The British Empire: its Structure and Spirit*, 1943; W. K. Hancock, *Argument of Empire* (Penguin), 1943, and in effect a summary of the author's monumental *Survey of British Commonwealth Affairs*, in two vols. (vol. 1., *Problems of Nationality, 1918-36*; vol. II., *Problems of Economic Policy, 1918-39*), 1937-42; R. R. Kuczynski, *A Demographic Survey of the British Colonial Empire* (vol. 1.), 1948; F. V. Meyer, *Britain's Colonies in World Trade*, 1948. **IMPERIAL POLICY AND GOVERNMENT AND COMMONWEALTH RELATIONS:** G. L. Beer, *The Old Colonial System, 1660-1754* (New York), 1912; H. E. Egerton, *British Colonial Policy in the Twentieth Century*, 1922, and *A Short History of Colonial Policy, 1606-1909* (9th ed., revised by A. P. Newton), 1932; J. Coatsman, *Magna Britannia* (on empire economic policy), 1936; R. M. Dawson, *The Development of Dominion Status, 1900-36*, 1937; Edward Jenks, *The Government of the British Empire* (5th ed.), 1937; A. Berriedale Keith, *Speeches and Documents on the British Dominions, 1918-31* (World's Classics Series), 1932; and *The Dominions as Sovereign States: their Constitutions and Government*, 1938.

British Expeditionary Force (B.E.F.). For operations abroad, the organisation of the Brit. Army provided for an expeditionary force of 6 divs. of infantry, each consisting of 598 officers and 18,077 men; with 54 field guns, 18 4.5 howitzers, and 4 heavy 60-pounder guns; and 1 div. of cavalry, consisting of 485 officers and 9412 men, with 24 horse artillery guns. In addition were auxiliary troops comprising engineers, signallers, and men of the Royal Flying Corps, besides troops for the line of communications. The famous B.E.F. which went out to France at the outbreak of the First World War numbered about 150,000 men. Only four infantry divs. with one cavalry div. were disembarked in Aug. 1914, the remaining two infantry divs., together with a second cavalry div., only reaching the W. front in mid-Sept. The force was under the command of Gen. Sir John French, and

its component corps under Sir Douglas Haig and Sir Horace Smith Dorrien, the 1st Cavalry Div. being commanded by Sir Edmund Allenby. The force was steadily augmented from the autumn of 1914 until by April 1915 it numbered some 750,000 men exclusive of colonial troops.

In the Second World War the B.E.F., commanded by Lord Gort, landed in France in September 1939, and was finally evacuated from Dunkirk on June 3, 1940. By Sept. 21 the B.E.F. only consisted of four divs., and the 51st Fr. Div. was accordingly included in the Brit. command. The 1st Corps, consisting of the 1st and 2nd Divs., moved to the Belgian frontier, a distance of 250 m. from its assembly area, on Oct. 3; the 2nd Corps, consisting of the 3rd and 4th Divs., began to arrive from Le Mans on Oct. 3. The commander of the 3rd Div. was Major-Gen. B. L. Montgomery (afterwards Field-Marshal Lord Montgomery). Major-Gen. H. R. L. G. Alexander (afterwards Field-Marshal Lord Alexander) commanded the 1st Div. The other two commanders were Major-Gen. H. C. Loyd (2nd Div.) and Major-Gen. D. G. Johnson, V.C. (4th Div.). At the time of the Dunkirk evacuation the B.E.F. numbered 250,000. In all 211,532 fit men and 13,053 casualties were embarked at Dunkirk (in addition to 112,546 allied troops, mostly Fr.). See BRITISH ARMIES IN THE WAR; WESTERN FRONT IN SECOND WORLD WAR.

British Film Institute, see FILM INSTITUTE.

British Guiana, or Demerara, a Brit. crown colony in S. America situated between the Orinoco and the Amazon. It is bounded by the Atlantic on the N., Dutch Guiana on the E., where the R. Corentyne separates them; by Brazil on the S. and S.W.; and by Venezuela on the W. The country has an area of approximately 90,000 sq. m., but definite boundaries have only recently been settled on all sides. The seaboard is roughly 270 m. long. Only about 200 sq. m. along the coast and up the rivers are cultivated. The colony was first partly settled between 1616 and 1621 by the Dutch W. India Company, who erected a fort at Kyk-over-al in the present country of Essequibo, and in 1624 a Flushing merchant, named Van Peere, made a settlement on the Berbice R. The first Eng. attempt at settlement was made by Capt. Leigh on the O'apock R. (now in Fr. Guiana) in 1604. The effort was followed by Robert Harcourt in 1613 and 1627, but his settlement was not permanent. Lord Willoughby, well known in the early hist. of Barbados, founded a settlement in Surinam in 1663, which was captured by the Dutch in 1667 and ceded to them at the peace of Breda in exchange for New York. The Dutch kept their hold over the country with varying degrees of firmness, now yielding to France, now to England or Portugal, until 1796, when during the war of the Fr. Revolution, it was captured by a Brit. fleet sailing from Barbados. The

ter. was restored to the Dutch in 1802, but was retaken by Great Britain in the following year, and finally ceded to her in 1814. In all Brit., Fr., and Dutch Guiana the physical characteristics are almost identical. On the Atlantic coast are alluvial deposits generally below sea level, and suffering heavy rains which convert them into mud swamps. Sandbanks jut out to the ocean, of which some are shifting, some fixed through the roots of mangrove-trees. The alluvial areas extend for from 10 to 40 m. inland; the area beyond is formed chiefly of detritus caused by the passing of the earlier mt. masses. The central area is a plateau of 3000 or 3500 ft. This is covered with a dense forest containing a wealth of timber, which has suffered little at the lumberer's hands, as the country is difficult of access except in the N. dists. A forestry dept. has recently been estab. The dist. is well watered by streams which enter the Atlantic. The large quantities of sediment brought down to their mouths effectively hinder any commercial value they might have, though their use in irrigation is unquestionable. Moreover, they are interrupted here and there by falls and rapids. Small vessels can navigate them as far as the first rapids. This length of navigation varies in different cases between 10 and 150 m. Artificial canals and various cross channels afford the princ. means of communication. The climate is hot and moist and uniform. During the larger part of the year the heat, averaging 80° F., is lessened by sea breezes. The rainfall is heavy and averages 90 in. annually. Naturally the flora of the dist. is luxuriant and abnormal. The vast numbers of trees contain woods suitable for shipbuilding (notably greenheart, found only in B. G., and mora), house-building, roofing, and cabinet-making; and the various products other than timber are gum, bark, resin, balsam, wax, fibre, oil, nuts. Food plants abound, as the sweet potato, arrowroot, tomato, guava, cherry, avocado, bread-fruit, melon, banana, pineapple, yam, rice, and maize. Hundreds of species of creeper are found in great plenty. Among animal life the birds present the most striking features; vultures, eagles, owls, nightjars, humming-birds, bell-birds, trogons, puff-birds, parrots, kingfishers, trumpeters, herons, and divers are included. Not so prolific as one would imagine from the wildness of the country are the animals, though specimens of tiger-cat, peccary, tapir, sloth, armadillo, ant-eater, agouti, opossum, raccoon, porcupine, monkey, and manatee abound. The native Indians lead a natural life in the woods. The W. part of B. G. contains the Parima Mts., the N. has the Imataca range, while the Acari Mts. form the S. boundary. Mt. Roraima (8740 ft.) is the highest peak. Among the important rivers are Corentyne, Berbice, Demerara, Essequibo, and Cuyuni. On the Potaro R., a trib. of the Essequibo R., are the famous Kaieteur Falls, which have a clear drop of 741 ft., and a total fall of 822 ft., or nearly five times as high as Niagara.

Over a third of the cultivable area is devoted to the growing of sugar-cane; rice is the crop that comes next in importance, and coco-nuts, coffee, cocoa, and limes are also cultivated. Guiana is very rich in minerals, especially gold, the output of which, since mining was commenced in 1884 until 1937, was valued at £10,749,500. The output of diamonds from 1901 to 1937 was worth £7,985,300. Bauxite, the ore of aluminium, is present in large quantities, the aggregate output to the end of 1937 being 2,358,000 tons (in 1937 over 300,000 tons were exported); manganese and mica have also been found, and petroleum is believed to be present. Apart from the products mentioned, B. G. exports rum, molasses, balata, and timber. The colony is divided into three provs., Berbice, Demerara, and Essequibo. The ports are Georgetown (pop. 77,500), the cap. (largely destroyed by a fire Feb. 23, 1945) and New Amsterdam (pop. 9500). Before 1923 the constitution of the colony consisted of the court of policy and combined court, but as a result of the recommendations of the Wilson-Snell commission (appointed 1926), an Order in Council was passed which (as amended in 1935) provided for the establishment of a legislative council in place of the court of policy and combined court which had existed since 1831. The composition of the council was altered in 1943 and now consists of the governor as president, three official and twenty-one unofficial members. Executive and administrative functions are exercised by the governor and an executive council. Facilities for establishing a defensive base on the Demerara R., 25 m. from the sea, were granted to the U.S. Gov. in 1940. There are 95 m. of single-track railway; otherwise communication is maintained by riv. traffic (350 m.), by canal (39 m.), by motor roads (365 m.), and by trails (about 200 m.). There are telephone and telegraph lines, and Georgetown wireless station is connected with five stations in the interior. The estimated pop. on Dec. 31, 1945, was 373,598, which included E. Indian immigrants to the number of 164,522. Blacks numbered 137,422; aboriginals, 9516; Europeans, 10,617, largely Portuguese, and mixed races, etc., numbered 47,853. Aboriginal Indians are occupied chiefly in hunting, fishing, and cassava growing. *See also* RUPUNUNI. *See W. Beebe, C. I. Hartly, and P. G. Howes, Typical Wild Life in British Guiana, 1917; O. Richardson, On the Diamond Trail in British Guiana, 1925; E. Waugh, Ninety-two Days, 1934; Sir C. Clement, A Constitutional History of British Guiana, 1937.*

British Gum, *see* DEXTRENE.

British Honduras, known also as Belize, Brit. crown colony in Central America. It is bounded on the E. by the bay of Honduras, in the Caribbean Sea, and borders in other directions upon Mexico and Guatemala. The peninsula Yucatan lies to the N. Its area is 8598 sq. m., and its pop. in 1937 was estimated at 56,900. The centre of the country is crossed by the R. Belize, while on the N.W. and S.

respectively are the Rs. Hondo and Sarstoon, forming natural boundaries. The highest part of the land is 4000 ft. above sea-level in the Cockscomb Mts. Along the coast the soil is low and marshy; for 10 to 20 m. inland it remains flat, and then rises in a series of hills 500–4000 ft. high. Nearly half the land is covered in primeval forest; elsewhere is savannah land and open plains, covered with wiry grass and scattered pine-trees—good ground for cattle-rearing. About 60,000 ac. of land are under cultivation, the chief crops being sugar, rubber, and cacao, which is also found growing wild. A great number of fruits are also grown, including bananas, plantains, citrus fruits, coco-nuts, and pineapples. The forests, however, are the most valuable possession of B. H., and logwood, mahogany, and cedar are the staple products. Though B. H. lies in the tropics, the climate has, with some justification, been described as sub-tropical. The range of temp. is small, and for many months in the year there is always a strong sea breeze. Visitors are usually agreeably surprised at the coolness of the climate, even during the summer months. The colony's reputation of being unhealthy is probably a legacy of the days when yellow fever was common throughout Central America. While the colony is not exceptionally healthy, it is certainly by no means a hot-bed of deadly diseases. There was an outbreak of yellow fever in 1904 and again in 1921, and since then the proper measures of control have been enforced. Malaria is prevalent, but the very serious types of the disease are not common in the colony. In anti-malarial work B. H. has taken a prominent place. Dysentery is not at all common here and typhoid is very rare. Means of communication are poor, there being as yet only one short railway of 25 m.—from Commerce Blight in the Stann Creek dist.—and this is shortly to be converted from a railway to a road. Roads connect the prin. tns., which also have telephone and telegraph facilities. There is wireless communication with Jamaica and New Orleans. The country first became known to Englishmen about 1638, but it is thought that Columbus discovered the coast in 1502 when on his way from Cuba to find a passage to the Indies. It is probable that settlers from Jamaica visited the country and, finding logwood available, estab. themselves in what is now B. H. Very soon they came in contact with the Spaniards and Indians of Yucatan and there are records of many conflicts. The Spaniards made repeated attempts to expel the Englishmen and their slaves, but in 1670 Spain ceded in perpetuity all lands in the W. Indies and in America held by the Eng. at the time. In 1717 the Spaniards made a determined effort to reconquer the settlement, and again in 1754 and 1779. Even after the treaty of London, 1786, by which Great Britain gave up the Mosquito Coast for the settlement, Spain renewed her attacks, this time from Mexico, but she was finally defeated in 1798 on Sept. 10 at St.

George's Bay. The first settlers, from 1638 to 1786, managed their own affairs, electing magistrates at public meetings, who discharged all executive and judicial functions. In 1765 the king gave a constitution to the people founded on the ancient customs. An executive council was first appointed in 1840 and, in 1853, a legislative assembly was formally constituted, but in 1870 this latter body was replaced by a legislative council, with a lieutenant-governor subordinate to the governor of Jamaica (first appointed in 1862) as president. Independence of Jamaica came in 1884 with the appointment of a governor and commander-in-chief. To-day the administration and government of the colony devolve upon the governor and an executive council consisting of 3 *ex-officio* members and of such other persons as the governor may appoint. The legislative council in its present form is constituted by an ordinance of 1935 (as amended in 1945) and is composed of the governor as president, 3 *ex-officio* members, and 10 unofficial members, of whom 4 are nominated by the governor and 6 selected by the constituencies. The cap. is Belize or Balize (17,000), and is a centre of the trade of Central America. Orange Walk, San Antonio, Corozal, El Cayo, Stann Creek, and Punta Gorda are other tns. of some importance. B. H. is governed as a crown colony. There is a dispute of long standing with Guatemala over the ownership of B. H. After negotiations beginning in 1857, a boundary agreement with Guatemala over the question was finally reached, on the basis of actual Brit. occupation and embodied in a treaty or convention signed at Guatemala city on April 30, 1859. Joint commissioners were appointed in 1860 to settle the position of the terminal parts of the S. section of the boundary, but the whole matter fell through over the Guatemalan claim that the requirements of Clause 7 of the convention, concerning the alleged obligation on Britain to build a road between Belize and Guatemala city, had not been fulfilled. In 1929 joint commissioners were again appointed, but only to lead to a renewed claim by Guatemala over the implementation of Clause 7. Guatemala professed to be especially anxious concerning smuggling, which they contended would be more easily controlled were the Brit. Gov. to construct a road or combine waterways with a new roadway from Belize. Guatemala then invited Great Britain to 'return to her the entire ter. of B. H. for £400,000 in settlement of all Guatemala's claims for fulfilment of the treaty of 1859, or, alternatively, that Great Britain should pay to Guatemala £400,000 and grant a strip of land at a specified point necessary to give the department of Petén an outlet to the sea, or, alternatively, Guatemala would forgo all claims for non-fulfilment of the treaty and Great Britain should pay £50,000 with interest as from 1859, etc. Naturally none of these proposals was acceptable to Great Britain, and on July 21, 1937, Guatemala proposed that

the matter be submitted to the arbitration of the Amer. president, a proposal which the Brit. foreign secretary accepted, with the substitution of the permanent court of international justice as arbiter—a proposal from which Guatemala shrank. Later, on June 15, 1940 President Ubico of Guatemala announced that 'efforts to incorporate B. H. with Guatemala would be suspended.' In Feb. 1948, urged on probably by ill-founded if well-advertised 'claims' by the Argentine and Chilean Govs. to Deception Is. and other ter. belonging to the Brit. Falkland Is. Dependencies, and indeed to the Falkland Is. as a whole, Guatemala took the opportunity of preparing a coup against Brit. Honduras. The Brit. Gov. promptly sent the cruiser *Sheffield* to Belize, because of reports that irresponsible elements from Guatemala might try to invade the colony. The Brit. cruiser *Devonshire* sailed to Belize (Feb. 28) from Jamaica, carrying a number of troops of the Gloucestershire Regiment to protect Brit. lives and property against harm by Guatemalan bands. Consult G. Ireland, *Boundaries, Possessions and Conflicts in Central and North America and the Caribbean*, 1941.

Like other parts of Central America, B. H. is rich in archeological remains, but they have been as yet but little investigated. Ruins of tns., pyramids, and temples of the early Maya period have been located in various parts of the colony; in ruins near Corozal, in the N., wonderful painted stucco-work was found; in the S. at Lubantaa, megalithic terraces, mounds, and pyramids were discovered. In 1926-27, excavation was started at Lubantaa by an expedition sent by the Brit. Museum. Among the structures of the Maya tn., which was, apparently, abandoned for some unknown reason long before the coming of the Spaniards, were found various interesting objects—bowls, vases, figurines, and masks of pottery, spear-heads and blades of stone, jadeite beads, and limestone pendants. The following year excavations were started at a site near Pusilha, and here, in a plaza surrounded by six flat-topped pyramids, were found fragments of twenty inscribed stelae. Six hundred eccentrically shaped flints and obsidian knives were also found. In the neighbourhood the remains of a bridge have been discovered—the only bridge known to exist near a Maya site (see MAYAS). See A. R. Gibbs, *British Honduras: an Historical and Descriptive Account of the Colony from its Settlement, 1670, 1883*; W. A. Morris, *The Colony of British Honduras, its Resources and Prospects*, 1883; M. S. Metzgen and H. E. C. Cain, *The Handbook of British Honduras* 1925 (pub. by West India Committee); T. Gann, *Mystery Cities*, 1925, and *Ancient Cities and Modern Tribes*, 1926; Sir J. A. Burdon, *Archives of British Honduras* (3 vols), 1931-35; J. E. Thompson, *Excavations at San José*, *British Honduras* (Washington), 1939; G. W. Dodds, *Report on Belize Harbour and some of the Rivers of British Honduras*, 1936

(Belize Gov. Printing Office); I. T. Sanderson, *Living Treasure* (New York), 1941; A. H. Anderson, *Brief Sketch of British Honduras* (Belize), 1927, 1944.

British India, see INDIA.

British India Steam Navigation Company was started in 1856, originally under the name of the Calcutta and Burma Steam Navigation Company, for the purpose of conducting trade along the coast of India. During the Indian mutiny, 1857, it did great service to the Brit. gov. by conveying troops from Ceylon to Calcutta, and again offered its services in 1867 during the Abyssinian campaign. Its present name was adopted in 1862. Trade with the E. received a great impetus in 1869 with the opening of the Suez Canal. The S.S. *India* of this line was the first steamer to arrive in London from India via the canal. The trade of this company became very extensive, and normally its vessels visit the ports of India, Burma, the Straits Settlements, the Philippines, the Dutch E. Indies, Queensland, and, since 1872, the E. coast of Africa. The company and the P. & O. joined interests in 1914, and it is one of the two predominant partners in the Inchcape group of Brit. shipping, the other being the P. & O. Though the line possesses no vessels of outstanding size, a total tonnage of more than 100,000 places the company among the largest steamship owners in the world. The words 'Steam Navigation' in its title are becoming a misnomer, for the line has over 20,000 tons of motor ships. Brit. India vessels have a black funnel with two white stripes.

British Industries Fair, ann. fair officially organised for the increase of Brit. trade. The fair owes its inception during the First World War to the difficulty experienced by Brit. traders in getting various imports from foreign countries whose supplies were cut off by reason of the war. The first fair was held in 1915, and showed that many of the wanted products were to be obtained from other parts of the empire. In succeeding years the fair was held in the Victoria and Albert Museum, warehouses at the London Docks, the Crystal Palace, and the White City. The fair moved in 1930 to Olympia. Its increase in size since that date has necessitated the use of buildings at the White City. In addition, a section of the fair was founded in Birmingham in 1920. The London section is organised by the dept. of overseas trade and the Birmingham section by the Birmingham chamber of commerce. The London section is devoted to the 'lighter' trades, such as textile, pottery, toys, furniture, stationery, etc., while at the Birmingham section the exhibits include hardware, machinery, transport, building, and kindred industries. A committee appointed by the board of trade under Lord Chelmsford to consider how to increase still further the utility of the fair to Brit. industry, emphasised in its report (issued December 1930) that the fair should be developed until it became an entirely national manifestation of the quality and range of

Brit. products, and an increasingly powerful factor in the expansion of Brit. trade. Each year has seen an increase of visitors over preceding years. Thus in 1936 there were 308,406 visitors (including 14,000 overseas buyers) as compared with 236,500 in 1933. In 1937 there was an increase of 10,000 over the figure for 1936. In 1939 the number of foreign and empire buyers reached the figure of 7000.

British Isles, archipelago off the W. coast of the continent of Europe, from which it is divided by the North Sea, the straits of Dover, and the Eng. Channel. It comprises Great Britain, made up of England, Scotland, and Wales; Ireland; the Orkney and Shetland Is., to the N. of Scotland; the Isle of Man, in the Irish Sea; the Scilly Is., off the coast of Cornwall; and the Isle of Wight and the Channel Is., in the Eng. Channel. Area 121,390 sq. m. Pop. (1931) England, 37,354,917; Wales, 2,593,014; Scotland, 4,842,554; Isle of Man, 49,338; Jersey, 50,455; Guernsey, etc., 42,606; (1928) N. Ireland, 1,250,000; Eire, 2,949,000. The pop. in June 1948 was: male, 24,260,000; female, 25,773,000.

Politically only N. Ireland is included in the term since the treaty with S. Ireland (1921), and in official use it has been superseded by 'Great Britain and N. Ireland.'

British Israelites, see ANGLO-ISRAELITE THEORY.

British Legion, association of Brit. men and women who took part in the two world wars. It was founded in 1921, and formed by an amalgamation of sev. 'ex-service' societies. These included the Comrades of the Great War, the National Association of Discharged Sailors and Soldiers (the 'Silver Badge' men), the National Federation of Discharged and Demobilised Sailors and Soldiers, and the Officers Association. These bodies united to form one national organisation under the leadership of Field-Marshal Earl Haig, its first president. A royal charter of incorporation was received in April 1925. The legion is non-political and non-sectarian and open to all Brit. (or naturalised) men and women who served in the Crown forces, Ired Cross, and similar associations during the wars. Its aim is generally to watch over the welfare of the ex-service man and to secure legislation for his benefit. Through an employment bureau it seeks to find him employment. It furnishes legal and financial aid; assists the ex-service man's family in education; cares for him, if tubercular, at an industrial village settlement; sees that he gets his pension; and in certain cases, through its business branch, sets him up in business. Its chief source of revenue is through the sale of 'Flanders Poppies,' which it manufactures in its poppy factory, and which the public buy on Remembrance Day, Nov. 11. The legion is democratically managed; it has about 3000 branches at home and abroad; its headquarters are at 26 Eccleston Square, London, S.W. 1.

British Medical Journal is the official

organ of the Brit. Medical Association. It is a contemporary and trustworthy record of the progress that is being made in every branch of medical science, and issues reports of all congresses, conferences, meetings of local societies, etc., of interest to members of the medical profession. It was first started in 1840 as the *Provincial Medical and Surgical Journal*, under the joint editorship of Dr. Hennis Green and Dr. Streeten, and has since then changed its name more than once. It is pub. weekly from the association's office, Brit. Medical Association House, Tavistock Square, London, W.C.

British Museum originated with the grant of £20,000, voted by Parliament in 1753, for the purchase of Sir Hans Sloane's collection of rare books, MSS., curiosities, and works of art, which had cost him £50,000. Montagu House was bought for £10,250 as a place for their reception. To the Sloane collection were added the Harleyan and Cottonian libraries, the former having belonged to Robert Harley, earl of Oxford, and the latter to Sir Robert Cotton, whose grandson bequeathed it to the nation in 1700. In 1757 George II. added to this collection the books collected by the kings of England from the time of Henry VII., including the libraries of Cranmer and Casaubon. In 1759 Montagu House was formally opened as the B. M. The museum was rapidly increased by gifts, bequests, and purchases. In 1772 Parliament voted £8400 for the purchase of Sir William Hamilton's collection of vases, antiquities, and drawings; in 1799 the Rev. Clayton Mordaunt Cracherode bequeathed his library of books and prints; George III. made a gift to the nation of the Egyptian marbles taken from Alexandria; and between 1805 and 1818 the State bought the Townley marbles, the Lansdowne MSS., the Phigalian marbles, the Elgin marbles, and the Burney library. The accommodation in Montagu House was no longer sufficient, and preparations for a new building were placed, in 1823, in the hands of Sir Robert Smirke. This new building, the present B. M., was completed in 1847. It faces S. on to Great Russell Street, the E. and W. wings being joined by a most impressive facade of columns, 37 ft. in height, after the Ionic order. To the E. and W. are semi-detached residences for the most important officers of the museum. King George III.'s library, presented by George IV., occupied the E. wing in 1823. Antonio Panizzi, keeper of the dept. of printed books, procured for the museum the bequest of the Grenville library, belonging to the Rt. Hon. Thomas Grenville, of 20,240 vols., which had cost about £54,000. With the increase of books in the library, the number of students and readers had greatly increased, and it was felt necessary that a new reading-room should be built. The present reading-room was designed by Panizzi, a grant was voted for it by Parliament in 1854, it was carried out under the direction of Sir Robert Smirke, and completed and opened in 1857. It was built into the interior of the quadrangle, the total cost

of construction being £150,000. It is a circular building, 140 ft. in diameter, the height of the dome being 105 ft. There are spacious desks to accommodate 300 readers, which are arranged in rows converging on the centre, where the catalogues are shelved. The book-cases around the reading-room stand 8 ft. high. They are made of galvanised iron, lined with leather, and books are placed on both sides of the cases, separated by an iron partition. There were originally about 25 m. of book-shelves, which could hold 1,000,000 vols. of octavo size; but now that the sliding book-cases, running forward out of the fixed ones, have been adopted, it is estimated that the length of shelving has been increased to 46 m. There are about 20,000 vols. in the reading-room, to which the readers have free access. The total number of vols. now in the library is about 3,000,000. Tickets of admission to the reading-room may be obtained on application to the prin. librarian through a letter of recommendation by a householder. The room will be shown to any members of the public if permission is asked in the Central Hall. It was soon felt necessary to build a separate library for the work on natural hist., and in 1873 buildings were commenced in Cromwell Road, Kensington, on the site of the International Exhibition of 1862. The Natural Hist. Museum was completed in 1881, at a total cost of £400,000. It is a terra-cotta building, designed by Alfred Waterhouse, in an early Romanesque style. It contains books on botany, zoology, geology, and mineralogy, besides stuffed animals and an invaluable collection of unique specimens. This natural hist. dept. of the B. M. has been greatly enriched from time to time by bequests and purchases, the chief of which may here be mentioned. The botanical dept. contains the herbarium of Sir Hans Sloane of 8000 specimens bound in 262 vols.; the herbarium of Sir Joseph Banks; and the herbarium of Brit. and foreign mosses collected by William Wilson. In the zoological dept. is Gould's famous collection of humming-birds, Wallace's collection, formed in the E. Archipelago, and Walsingham's collection of birds and birds' nests. The geological cases are arranged in the wall of the upper gallery on the N. side, the prin. collections being those of Dr. Mantell, and the tertiary fossils collected by Dr. Falconer in India. The sum of £65,000 accrued in 1879, which had been bequeathed by William White (*d.* 1823). With this sum a new wing was added to the B. M. at Bloomsbury, jutting out from the S.E. angle. This wing was opened in 1882, and contained pottery, glass, prints, and drawings. The latest addition to the museum was begun during the chancellorship of Sir William Harcourt (1892-94), when the ground at the back of the museum was bought from the duke of Bedford. A handsome new suite of galleries, known as the King Edward VII., was opened in 1914. The B. M. is divided into different depts., which have been classified as follows: (a) printed

books; (b) manuscripts; (c) prints and drawings; (d) oriental antiquities; (e) Gk. and Rom. antiquities; (f) coins and medals; (g) Brit. and medieval antiquities.

(a) The printed books have already been dealt with in reference to the reading-room. In 1880 it was found that the MS. catalogue had increased to an unwieldy number of vols., and therefore the plan was adopted in 1881, under the supervision of Dr. Richard Garnet, of printing the title slips. Various catalogues dealing with special subjects have been printed, of which the most valuable is that of old Eng. books prior to 1641.

(b) The MSS. are accessible to students on application. A great number of illuminated MSS., early documents of special interest, and autographs of great men and women are permanently exhibited in show-cases; special exhibitions are also arranged at various times. This dept. contains two original copies of the Magna Charta, the earliest known copies of the *Odyssey* and the *Iliad*, the *Codex Alexandrinus* (i.e. a MS. of the Bible written in uncial Gk. before the close of the fifth century), the *Codex Sinaiticus* (q.v.) acquired in 1933, and countless other priceless MSS. of equal interest.

(c) The prints and drawings are kept in the White wing, already mentioned. In addition to the Cracherode bequest, Payne Knight, in 1824, gave his collection to the museum. Since then purchases have been made and further donations given, until a unique collection has been formed of drawings, etchings, and engravings, and also prints from the works of well-known masters. There are examples of the work of Raphael, Michelangelo, Leonardo da Vinci, Rembrandt, Hogarth, etc., and the Eng., It., Ger., Dutch, Flemish, and Jap. schools are all represented. A catalogue was issued in 1887.

(d) Among the oriental antiquities, the most notable are the Egyptian monuments (2000 B.C. to A.D. 640), the Rosetta Stone, which affords the key to hieroglyphics, the Assyrian sculptures, excavated at Nimrud from the palace of Assur-nasir-pal (885-860 B.C.) at Khorsabad, Koyunjik, and elsewhere by Layard, Rassam, Loftus, and Sir H. C. Rawlinson.

(e) In the classical antiquities dept. are the beautiful Elgin marbles, which originally decorated the Parthenon at Athens, the sculptures of the Mausoleum at Halicarnassus (excavated 1857), sculptural remains from the anct. cities in Lycia (obtained by Sir C. Fellows, 1842-46), and some of the finest pieces of statuary, representative of Gk. and Rom. art, to be found in the world. There is also a fine collection of antique vases, bronzes, gems, gold ornaments, etc.

(f) The coins and medals are representative of Gk., Rom., Eng., foreign, medieval, and modern times.

(g) Among the Brit. and medieval antiquities is placed Henry Christy's valuable ethnographical collection, bequeathed in 1865, the Slade collection, and the gifts of A. W. Franks. A most interesting feature in this dept. are implements of war

and articles of domestic use belonging to the Stone and Bronze Ages.

In 1911 a new scheme was devised for interesting the public in the contents of the museum. From May till Oct. official guides conducted parties to the various depts. at certain fixed times. The experiment having proved successful, these guides were estab. permanently in Dec. 1911. During the First World War many of the most valuable possessions of the B. M. were removed for safety to a disused railway tube under Holborn, also to the Welsh National Library at Aberystwyth. Part of the galleries were used for housing certain gov. civil staffs whose ordinary offices had been requisitioned by the military authorities. After 1918 one of the most striking activities of the B. M. was the joining with the univ. of Philadelphia, U.S.A., in sending an expedition to Ur of the Chaldees in Mesopotamia. The ann. exhibitions of these archeological 'finds,' revealing the high state of Sumerian civilisation in the fourth millennium B.C., aroused wide interest (see Ur).

In 1930 Parliament passed the Brit. Museum Act, 1930, to give effect to certain recommendations of the royal commission on national museums and galleries. The chief clause in this measure separated the offices of the prin. librarian at Bloomsbury and the director of the Natural Hist. Museum at S. Kensington. This was a necessary step, for the original statute creating the B. M. provided that the prin. librarian should also be the head of the Natural Hist. Museum. As the head of the latter museum had no direct access to the treasury, and therefore could only make representations as to his natural hist. needs through an official mainly concerned with humanistic collections, it was thought well to make the director of the Natural Hist. Museum wholly responsible for the care of his collection. Another clause in this Act abolished the original statutory requirement that the prin. librarian should enter into a bond of not less than £10,000 that he would duly and faithfully discharge the duties of his office.

The B. M. also has a building at Colindale, near Hendon, where newspapers are stored.

During the war, in 1940, an oil bomb crashed through the dome of the reading-room, but did little damage. The museum was damaged by six high-explosive bombs, two of which fell in the forecourt, and by innumerable incendiaries—sometimes with very serious results. The first of these high-explosive bombs to hit the museum was a 100-lb. bomb which fell on the King Edward VII. building, on Sept. 18, 1940, but did not explode. On Sept. 23 a 500-lb. bomb came through the same hole, in the print room roof, and broke without exploding. More unfortunate in its effects was a 100-lb. bomb which fell through the ethnographical gallery into the king's library on Sept. 23, destroying 500 books. On Nov. 16 a bomb fell in the pediment hall, destroying the elaborate glass roof of the Parthenon gallery. But chief

damage was caused by incendiaries: on the night of May 10-11, 1941, ten of the upper galleries were destroyed, including the Gk. bronze room, a Gk. vase room, the room of Gk. and Rom. life, the prehistoric saloon, the Rom.-Britain room, and the coin and medal room. The exhibits, however, with minor exceptions, had been evacuated to safe quarters. The same night was burnt the S.W. quadrant of the museum's main book-stack, some 150,000 vols. being destroyed—mostly works on medicine, law, archaeology, and the arts pub. within the past 100 years or so, and it is probable that all could ultimately be replaced. In the previous year, on Oct. 20, a direct hit was made on the B. M.'s newspaper repository at Collindale and 30,000 vols. of bound newspaper files were destroyed, mostly Eng. provincial journals, of the nineteenth century.

British New Guinea, see PAPUA.

British North Borneo, see BORNEO.

British Railways, see under RAILWAYS.

British Solomon Islands Protectorate, see SOLOMON ISLANDS.

British South Africa, see BASUTOLAND, BECHUANALAND, CAPE COLONY, NATAL, ORANGE FREE STATE, RHODESIA, NORTHERN; RHODESIA, SOUTHERN; TRANSVAAL.

British South Africa Company, The, obtained a royal charter in 1889, through the efforts of Cecil Rhodes. Its object was to protect Rhodesia, to further commerce, and to develop mineral and other resources of the dist. over an area exceeding 700,000 sq. m. Dr. Jameson was administrator of the company's ters. until the Transvaal raid, 1895-6, being succeeded by Earl Grey. In 1914 the charter expired, but was tacitly renewed for ten years. In 1922 S. Rhodesia voted in favour of responsible gov., and a year later was formally annexed to the Brit. dominions. By an agreement between the Brit. gov. and the company the company surrendered its rights and claims, buildings and assets, etc., used for administrative purposes, and its land and monopoly rights other than mineral rights under its concessions in S. and N. Rhodesia, in consideration of a cash payment of £3,750,000 and a half interest for forty years in the net proceeds of the disposal of land in N.W. Rhodesia. On June 29, 1933, the mineral rights of S. Rhodesia were bought by the S. Rhodesian gov. for £2,000,000, the gov. to assume all obligations imposed on the company by grants to other parties. Among the remaining assets of the company are: mineral rights throughout N. Rhodesia; citrus and other estates in S. Rhodesia totalling 110,000 ac.; a half interest for forty years from Oct. 1, 1923, in the net proceeds of the disposal of land by the gov. in N.W. Rhodesia; about 16,000 sq. m. of mineral rights in Nyasaland; and about 80 per cent of the issued shares of Rhodesia Railways Trust. The authorised capital is £6,750,000, of which £6,570,376 10s. has been issued, the capital originally being £1,000,000 in £1 shares. To-day £3,593,457 is held in the form of registered stock and £2,976,920 in shares of 15s.

British Thermal Unit (B.Th.U.), the amount of heat required to raise 1 lb. of water 1° F. The *Gas Therm* = 100,000 B.Th.U. If V = cu. ft. consumed, H = declared heat value of the company's gas in B.Th.U.s. per cu. ft., P = cost of therm in pence, B = total bill in pence—then $B = V \times H \times P \div 100,000$, whence the equivalent cost in pence per 1000 cu. ft. = $B \times 1000 \div V = H \times P \div 100$. See also CALORIE.

British Transport Commission, see under TRANSPORT ACT, 1947.

British Weekly, The, 'a jour. of social and Christian progress,' was founded in 1885. It presents a weekly record of the Free Churches, and discusses the topics of the day from the nonconformist point of view. A feature of its pages was 'The Correspondence of Claudius Clear,' a weekly causerie by the editor, Sir W. Robertson Nicoll. The subjects of the 'Correspondence' cover a wide range, mainly literary and biographical, and the articles in style are among the best examples of that type of journalism. The leading articles deal principally with theological and ethical questions.

British West Africa, see GAMBIA, GOLD COAST, NIGERIA, SIERRA LEONE.

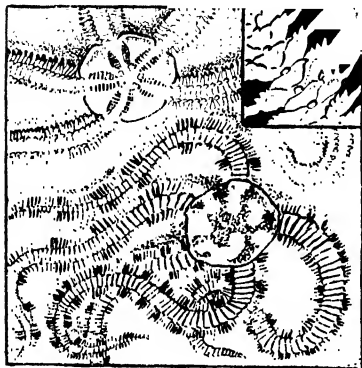
British West Indies, see WEST INDIES.

Britomartis, Cretan goddess (sweet maiden); daughter of Zeus and Carme. Pursued by Minos, she flung herself into the sea, but was saved and made a goddess by Artemis, with whom she was later identified. Goddess of hunters, said to have invented nets—hence called Dictynna (Gk. *dictyon*, a net). Spenser (*Faerie Queene*) represents Elizabeth as B.

Briton Ferry, seaport in Glamorgan-shire, Wales, at the mouth of the R. Neath, 2½ m. from the tn. of Neath, to which it acts as port. The docks belong to the Brit. Transport Commission. There are also coal mines, and steel and iron works. Pop. 9000.

Brittany (Fr. *Bretagne*), old prov. in the N.W. of France, forming a peninsula between the bay of Biscay, the Atlantic Ocean, and the Eng. Channel, and comprising the depts. of Finistère, Côtes-du-Nord, Ille-et-Vilaine, Morbihan, and Loire-Inférieure. The inhab. are of Celtic origin, and the Armorican or Breton language, belonging to the Cymric div. of Celtic and allied to Welsh, is spoken. The peasants are a sturdy race, tenacious of their anct. superstitions and traditions. The country is one of the most picturesque in Europe, with its old-world tns. and anct. druidical monuments. It was conquered by Julius Caesar in 57-56 B.C., and was known to the Roms. as *Armorica*. It suffered during the fifth and sixth centuries from A.-S. invasions, when its name was changed to *Britannia Minor*. During the tenth century, when the country was closely allied with Normandy, it was an independent country governed by its own dukes. In 1169 Henry II. made his son Geoffrey duke of Brittany, and he was succeeded by his posthumous son Arthur. Afterwards it became a vassal prov. of France, but broke away about 1338. During the Hundred Years

war it was alternately the ally of England and France, and was frequently a cause of quarrel between the two countries. It was finally incorporated with France by Francis I. in 1532. During the Fr. Revolution it supported the Bourbons. In 1944, eight weeks after the Anglo-Amer. landings in Normandy, the Amers., heavily reinforced with tanks, motorised infantry, and low-flying aircraft, made



BRITTLE STAR (*Ophiocoma nigra*)

The inset shows a small portion of one arm enlarged.

simultaneous thrusts—E. to Mortain, W. to Dinan to probe the Breton peninsula, and S. to Rennes to cut that peninsula off, and all three places were reached on Aug. 3; and by Aug. 5 the thrust through Rennes prolonged itself to the Loire estuary on a broad front, and the isolation was achieved. The Ger. counter-attack towards Avranches retook Mortain but could go no further. Amer. tanks and Fr. guerrillas speedily mopped up B. save for the garrisoned ports, Brest, Lorient, and St. Malo. See further WESTERN FRONT IN SECOND WORLD WAR; BREST. See Menpes's *Brittany* (New York, 1905); Bell's *Picturesque Brittany* (1906); and Leslie Richardson, *Brittany and the Loire* (1927).

Britten, Edward Benjamin (b. 1913), Brit. composer, b. at Lowestoft, educated at Gresham's School, Holt, and Royal College of Music (scholarship for composition). Worked with G.P.O. film unit, 1935-37, and in America, 1939-42; Coolidge Medal, 1941. Earliest pub. work: a Sinfonietta (chamber orchestra), 1932; attracted attention with *A Boy was Born*, an elaborate set of unaccompanied choral variations. Numerous other works followed, including songs and choral music, orchestral music, folk-song arrangements, etc. *A Suite for Violin and Piano*, 1934-35, was performed at the International Musical Festival, Barcelona, in 1936; other works include: *Our Hunting*

Fathers, Symphonic Cycle (with W. H. Auden), 1940; *Hymn to St. Cecilia* (with W. H. Auden), 1942; *Prelude and Fugue for 18-part String Orchestra*, 1943. Made his name with *Peter Grimes*, an opera in 3 acts, and prologue, 1944. Followed this with *The Rape of Lucretia* (with Ronald Duncan), an opera in 2 acts, 1946, and a comic opera, *Albert Herring*, 1947.

Brittle Stars is the popular name applied to the animals of the class Ophiuroidea among the Echinoderms. They have many points in common with the Asteroidea, or starfish, but they are more active and muscular, have no anus, the ambulacral groove on the ventral surface is covered, and the arms contain no prolongation of the viscera. The name refers to the way in which these star-shaped creatures can break off an arm; when this is done another quickly grows in its place. They are sometimes known also as sand-stars, from being found on the beach. Typical Brit. species are *Ophiura ciliaris*, *Ophiopholis aculeata*, *Ophiocoma nigra*, and *Ophiothrix fragilis*.

Britton, John (1771-1857), topographer and antiquary, b. near Chippenham, Wiltshire. In 1801 he co-ed. with Brayley (q.v.) the *Beauties of Wiltshire*, which proved very popular, becoming the first of the series *The Beauties of England and Wales* (1801-15), 9 vols. of which were written by B. and his friend, including the equally popular *Beauties of Bedfordshire*. He also pub. *The Cathedral Antiquities of England* (14 vols., 1814-35). See his *Autobiography* (1850) and a notice of B. by Digby Wyatt in the *Papers of the R.I.B.A.* (1856-57).

Brive, or **Brives-la-Gaillarde**, tn. in the dept. of Corrèze, France, on the R. Corrèze, about 18 m. S.W. of Tulle; Briva Curretiae of the Rom. The church of St. Martin dates from the twelfth century. Its chief industries are the manuf. of tin and copper ware, and candles; there is considerable trade in wine, chestnuts, truffles, and *pâté de fete gras*. It was the bp. of Cardinal Dubois. Pop. 24,050.

Brixen, see BRESSANONE.

Brixham, seaport in the co. of Devon, England, on the S.W. side of Torbay, opposite Torquay. It is principally noted for its fisheries, on which numerous boats are engaged. Shipbuilding is an important industry of the place, and there are iron mines, lime pits, and mineral-paint works. A cave on Windmill Hill was discovered in 1858, and contains many interesting palaeolithic remains. William of Orange landed at B. in 1688. Pop. 7780.

Brixlegg, vil. in the Tyrol, Austria, about 20 m. E.N.E. from Innsbruck. The chief occupation of the inhab. is that of smelting; practically all the silver and copper ores which are found in the mines at the neighbouring tn. of Mattenberga are smelted at B. Pop. 1590.

Brixton, div. in the par. and bor. of Lambeth, Surrey. Pop. 76,621.

Briza is the name of a genus of Gramineæ which occur in temperate climates, and of which two species grow in Britain, the *B. media*, or common quaking grass (q.v.),

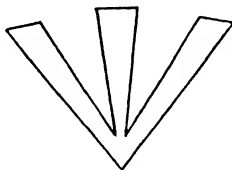
and *B. minor*, or small quaking grass. *B. major* is a species naturalised in Guernsey. *B. maxima*, a species from S. Europe, is sown as a border annual. All species are very slight, shaking with the least breath of air, and as pasture they yield little nutriment.

Brizio (or **Brizzi**), **Francesco** (1574-1622), It. painter, b. at Bologna. He studied under Lodovico Carracci, and was perhaps his best pupil, executing some admirable work. B. was also an engraver of some note.

Brno, see **BRUNN**.

Broach, see **BAROACH**.

Broad Arrow, mark of the Brit. Gov. stamped on all gov. stores. Any one



BROAD ARROW

defacing this mark is guilty of felony, and any one unlawfully in possession of goods thus stamped can be fined £200 and costs.

Broadbent, **Sir William Henry** (1835-1907), physician, after graduating at Owen's College, Manchester, continued his studies at Paris. From 1858 to 1896 he was on the active staff at St. Mary's Hospital, London. At the medical school he was lecturer on physiology, zoology, and comparative anatomy, and proved an excellent clinical teacher. From 1860 to 1879 he was physician to the London Fever Hospital. He was in attendance on the duke of Clarence at his death, 1892, and Queen Victoria, Edward VII., and George V. were at different times his patients. His hypothesis to explain the unequal distribution of paralysis, in the form of hemiplegia, is still unrefuted, whilst he first suggested with authority a separate centre for conception of ideation. He was also president of the Brit. Medical Benevolent Fund, 1900, and proved himself an able lecturer.

Broad-bottom Administration was the name satirically given to Henry Pelham's ministry, which lasted from 1744 to 1754, the year of Pelham's death. It was so called because it admitted every man of part, talent or influence, irrespective of party. Pelham stooped to the most corrupt practices, such as would have disgusted even his predecessor, Walpole, and was prepared to support any one powerful enough to be dangerous. The nation, inured to vicious govts., believed it could prosper without any at all, but learnt its mistake when the young pretender won his crushing victory at Prestonpans (1745), and when it was involved in a useless war with France (1743-48).

Broadcasting (Sound), transmission of speech or music by wireless telephony.

Before the First World War B. was still in the experimental stage, but considerable development took place during the war. Popular B. on a large scale began in the U.S.A. in 1920, when the possibilities of the medium for advertising purposes were recognised. A large number of stations were set up by various trading concerns, including manufacturers of radio apparatus, and by 1924 over a thousand stations had been licensed. The result was uneven distribution and overcrowding of the ether, and a regulating law was passed in 1926. The following year the Federal communications commission was set up under the secretary of commerce. The F.C.C. issues licences for the operation of a B. station, allocates wavelengths, and determines the strength of the station and the hours during which it operates. It has no rights of censorship and cannot interfere with the programme services, but will refuse to renew a licence if it is in the public interest to do so. Apart from this measure of control, B. in the U.S.A. is open to competitive private enterprise. Amalgamation has, however, resulted in the formation of three major B. systems. The largest is the National B. Company (N.B.C.) which was founded in 1926 and operates a network of some 250 stations, including a number of powerful short-wave stations B. internationally. The second important system is the Columbia B. System (C.B.S.), started by the Columbia Gramophone Company in 1927. The Columbia network consists of a group of about 130 stations. The third national network in the U.S.A. is that operated by the Mutual B. System (M.B.S.). In addition there are a number of low-power stations and smaller networks which broadcast programmes of local interest to a limited area. It is estimated that B. reaches practically the whole pop. of the U.S.A., and that about 60,000,000 receiving sets are in operation.

By the Amer. system of B. programmes are 'sponsored' by national advertisers, and consequently B. is entirely gratuitous to the public, while at the same time there is free competition to catch the public ear. The ann. revenue from advertisement amounts to some 200 million dollars and provides not only for the 'sponsored' programmes, but also for the 'sustaining' programmes which are produced by the B. company itself or by arrangement with cultural institutions, etc. Some stations, on the other hand, are wholly supported by religious and educational institutions, and refrain from B. advertising matter altogether. The privately owned Amer. system differs from that in force in Great Britain and the majority of European countries, where B. is financed out of revenue obtained by the State from the issue of licences for listening. Great Britain was the first country to organise B. on the lines of a public service, operated by a public corporation, and its example was followed by other countries, notably the dominions. In Sweden a flourishing B. system is run by a private financial company,

which is, however, financed by the State from licence revenue. In other European countries B. is controlled by the State itself, although in some countries, e.g. France and Hungary, state B. exists side by side with privately run services. The Netherlands, however, are unique in that before the Ger. occupation B. was operated by free associations of listeners. Germany, before and during the Second World War, was one of the countries which developed B. most actively as a gov. service. The Reichs-Rundfunk-Gesellschaft was set up in 1933 when



A B.B.C. MAST AERIAL

B.B.C.

Hitler came to power, and superseded the various private B. organisations which had previously been in operation. Thirteen alternative programmes were offered to Ger. listeners, although during the war these were cut down to a single, or at most, a double service. Nearly 20,000,000 receiving sets were in operation. In the U.S.S.R. B. is also run as a gov. service, operating about 100 stations, some with considerable power, radiating on both long and short waves. 'Wire' B.—the transmission of broadcast programmes by telephone lines to subscribers through the medium of relay exchanges—is highly developed in Russia, with 3,000,000 subscribers. This system has also found favour in other parts of Europe, notably Switzerland and Holland, while in Great Britain relay exchanges have been set up in a number of large towns.

As regards the development of B. in Great Britain, Brit. B. profited from the difficulties which arose in the U.S.A. owing to the absence of any central

authority. In 1922 the Brit. B. Company Ltd. was formed, combining the interests of six large wireless and electrical manufacturing firms. In Nov. stations were operated at London, Manchester, and Birmingham, and in Dec. at Newcastle. In 1923 the Sykes committee report estab. the B.B.C. on a national footing and provided for the extension of the system by a number of relay stations. This led in 1925 to the erection of a high-power station at Daventry with a wavelength of 1600 metres and a power in the aeriels of 25 kw. The London station, in common with the other main stations, worked on a wavelength of between 300 and 400 metres. Thus by 1926 the system of national and regional programmes had come into existence, and there were by that time over a million licence-holders. In that year the operating licence of the B.B.C. expired, and on the recommendation of the Crawford committee a public authority was constituted under royal charter, called the Brit. B. Corporation (B.B.C.). The whole staff, machinery, etc., of the old company was taken over intact, and the supervision exercised by the postmaster-general continued as before. The licensing fee was fixed at 10s., payable to the post office, and the B.B.C. was financed by a share in the revenue from the licences. The percentage varied according to the number of licence-holders until 1936, when it was fixed at 75 per cent. In that year the charter expired, and from Jan. 1, 1937, a new charter came into force under which the corporation continued for a further ten years. The number of licence holders—approximately 2,800,000 in 1929—rose to nearly 8,000,000 by 1937 and 9,000,000 by 1939. The total audience was estimated at 32,000,000. During the Second World War the B.B.C. was financed by means of a treasury grant, but its independence under the charter continued with the proviso that in all matters affecting the war effort it was subject to the guidance of the minister of Information. At the end of 1946 the royal charter expired, and from Jan. 1, 1947, a new charter was granted for a further period of five years. The B.B.C.'s finances were again placed on the basis of a percentage grant of the licence revenue, the ann. licensing fee having been raised to £1. There were in 1947 approximately 10,500,000 licence-holders.

Technical development has gone steadily forward since the first days of the B.B.C. In 1927 a second high-power station (5GB) was erected at Daventry, with a wavelength of 491 metres and a power of 30 kw. in the aerial. The programmes from the Birmingham studio were transferred from the Birmingham station to Daventry (5GB), while the programmes broadcast from Daventry (5XX) were transmitted from the London studio.

Experiments at the long-wave high-power stations at Daventry led to the regional scheme, proposed in 1928. The scheme replaced the low-power stations by a smaller number of high-power stations, if possible each having two

wavelengths. Such reorganisation was the outcome of the work done by the International B. Union. The union was originally formed in Geneva in 1925 to promote co-operation between European broadcast systems rather than competition, and also for the interchange of technical knowledge. One of the first problems confronting the union was the distribution of wavelengths so as to avoid 'jamming' and interference between stations. The details for this distribution were drawn up in the 'Plan de Genève.' By this plan a limited number of wavelengths were allocated to each European

when working with short waves, which it is possible to concentrate, the loss in energy of the long-distance ray is less. On Nov. 11, 1927, a short-wave station (5SW) was opened at Chelmsford, and a month later regular transmissions were begun on five days a week. In 1932 the B.B.C.'s empire service was inaugurated, with daily transmissions for ten hours each day from four transmitters operating at Daventry. This service gave an impetus to B. in the dominions themselves. Australia had from the first become radio-minded, but it was not until 1932 that the official service, the Australian



REHEARSAL FOR A BROADCAST PLAY

The cast is studying the script under the guidance of the producer.

country, and this meant fewer stations with wider distribution. In England ten wavelengths were made available. In 1929 the construction of a twin-wave station was started at Brookman's Park, N. London, and by Dec. tests on a two-programme basis were made. In Oct. a similar station was put under construction to provide an uninterrupted alternative programme to the N. of England.

Experiments were also conducted with short waves. Of the two waves which are radiated from an aerial, one, the ground ray, runs parallel to the ground, the other at an angle. This second ray travels upward until it meets a layer of electricity embracing the world. It is then bent back towards the earth and again deflected upwards, thus covering a great distance by leaps and bounds, since there are no obstacles such as impede the ground ray. It is found that

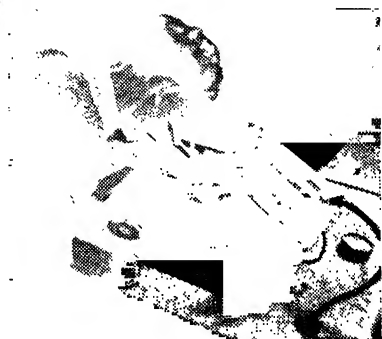
B. Commission, was set up. Other dominions followed suit, and the Canadian B. Corporation, the S. African B. Corporation and the National B. Service of New Zealand were all created in 1936, while All India Radio commenced operations in 1935.

In the years immediately preceding the Second World War, the B.B.C. was operating one high-powered (150 kw.) long-wave transmitter at Droitwich which carried the 'national' programme, also radiated by three medium-wave transmitters, and twelve other medium-wave transmitters which carried the various regional programmes. In addition, six transmitters at Daventry sent out the empire service on short waves. On the outbreak of war, the separate regional services came to an end, and a wartime system of B. was put into operation to avoid giving navigational aid to enemy

aircraft. A single programme, the Home Service, was provided for listeners in the United Kingdom, later (in 1940) supplemented by a programme for the forces. At the end of the war regional B. was resumed, the Home Service continued in being, and a Light Programme, to which national coverage was given, was inaugurated in 1945. In Sept. 1946 a further alternative programme was provided for listeners by the B.B.C.'s Third Programme, designed to give scope to programmes with a serious cultural interest.

As regards the type of broadcast programme offered to listeners the world over, it is found that programmes follow the same pattern, whether B. is organised on the American or European system. Where the B. organisation depends on advertising revenue, there is a tendency to stress the lighter side of radio entertainment, while at the other end of the scale comes the state B. service in which propaganda and official information is given a larger share of programme time. Programmes divide roughly into music, drama, speech, education, religious broadcasts, and broadcasts of public events (known to Brit. listeners as outside broadcasts). In Great Britain the king's speech at the opening of the Brit. Empire Exhibition at Wembley, April 23, 1924, was the first outside broadcast of importance. Music is by far the largest component, averaging about 50 per cent of programme time, or even more when light music and dance music are taken into account. Most B. organisations take an active part in the musical life of the country concerned, maintaining orchestras and arranging concerts which, although for B. purposes, may nevertheless be given in public. In Great Britain the London Promenade Concerts were broadcast under the auspices of the B.B.C. in 1927 and succeeding years, and by 1930 the B.B.C. Symphony Orchestra was in being. Opera has found many of the difficulties of presentation eliminated by B., and radio drama (*q.v.*) is a new art which has been enthusiastically developed, growing greatly in popularity in both Great Britain and the U.S.A. The B. of the spoken word was under a rigid censorship exercised by the post office until the formation of the corporation in 1926, when censorial powers were transferred from the G.P.O. to the B.B.C. itself. All controversial matter relating to politics, religion, and industry were still excluded from the programmes. Election addresses, however, had been permitted to be broadcast at the time of the general election in 1924; and during the national strike of 1926 the Gov. made use of B. as an ideal means of keeping the public informed of events in a way which the Gov. was able to supervise. The B.B.C. had continually agitated for the abolition of the ban on controversy since 1923, and largely as a result of the strike news service the Gov. on March 5, 1928, decided to remove the restrictions. The B.B.C., however, was not permitted any editorial expressions of opinion on any events of public interest. Since that date controversial matter has

been introduced in the form of broadcast debates, 'points of view,' etc. Authoritative information has always been an important ingredient of a broadcast programme, and in the years leading up to the Second World War and during the course of the war all countries gave more and more time to news bulletins, propaganda and political items, and informative talks. B. also developed its own form of news presentation, supplementing the straight news bulletins by means of eye-witness accounts and recordings of events with commentaries made on the scene at the time they were taking place.



B.B.C.

RECORDING A PROGRAMME

The engineer is examining the grooves on the disk through a microscope as the programme is recorded.

In particular the war reporting of Brit. and Amer. radio reached a high standard of vividness and accuracy. Many programmes, talks, or news items are recorded for B. at times which are more convenient for the listeners; such records too may have a considerable historical value.

Among the specialised programme services provided by B., the most important are perhaps the broadcasts to schools. In Great Britain the value of educational B. was estab. as early as 1927, when a year's experiment was conducted among the schools in Kent. Twenty years later over 12,000 schools were registered as listening regularly to the B.B.C.'s schools broadcasts. In the U.S.A. education by radio has also achieved a prominent position, educational broadcasts being provided by the Amer. companies for nearly 100,000 schools. Australian B. is also notable for its contributions to schools. Allied with these broadcasts are those designed for children out of school hours, such as the children's hour of the B.B.C., and those aiding adult education by means of broadcast lectures and discussions. Most B. organisations allot part of their programme time to serving separate sections of the community in this way. There are, for example, broadcasts

for minority language groups within the state (as in the U.S.A. and U.S.S.R.), and the broadcasts for farmers which form a regular part of Brit. and Amer. programmes.

The radio development to which the Second World War gave the greatest impetus was in the sphere of international B. Before the war the countries under an authoritarian regime—Russia, Germany, and Italy—were the first to conceive the idea of broadcasting to foreign audiences. Germany broadcast in thirty different languages and Italy in eighteen. Until 1938 broadcasts from England for consumption outside the United Kingdom were entirely in Eng. as part of the B.B.C.'s empire service, but in that year Great Britain entered the field of foreign language B. Transmissions were started in Arabic and Sp. and Portuguese (for S. America), and later in Ger., It., and Fr. The war brought a very rapid expansion, as the B.B.C.'s overseas services, as they then came to be known, were broadcasting regularly not only to the dominions and colonies as in peacetime, but to Europe, the U.S.A., Latin America, the Near E., and the Far E., employing more than forty languages. To overcome the uncertainties of short-wave reception every effort was made to secure the rebroadcast by local long-wave and medium-wave transmitters of programme items originated in the United Kingdom, and this was done not only in the dominions with the co-operation of the dominion B. organisations, but also in the Americas. The relaying of programmes from one country to another has become firmly estab. since its early beginnings in 1929 when the B.B.C. first made successful relays from America, and it is likely to become an increasingly common feature in world B. of the future. As regards the Brit. Commonwealth in particular, the exchange of programmes and of B. facilities between Great Britain, the dominions, and colonies was the subject of discussion at the first commonwealth B. conference held in London in 1945. See also RADIO DRAMA.

Bibliography: J. C. W. Reith, *Broadcast over Britain*, 1924; S. L. Rothafel and R. F. Yates, *Broadcasting, its New Day*, New York, 1925; H. Matheson, *Broadcasting*, 1933; E. H. Robinson, *Broadcasting and a Changing Civilization*, 1935; R. Arnheim, *Radio*, 1936; A. Lloyd-James, *The Broadcast Word*, 1938; A. Huth, *Radio To-day*, Geneva, 1940; P. P. Eckersley, *The Power Behind the Microphone*, 1941; P. Bloomfield, *B.B.C.*, 1941; the *B.B.C. Year Book*, pub. annually.

Broadcasting (Visual), see TELEVISION. **Broadmoor**, in Sandhurst par., S.E. Berkshire, England, a state asylum for criminal lunatics. It was built in 1863, and will accommodate 700 persons.

Broads, The, level dist., chiefly in Norfolk, but also in Suffolk. The B. are shallow lakes connected by 'dykes' to the rvs. which intersect the country, viz. the Rs. Yare, Bure, with its tributaries the Ant and the Thurne, and Waveney. There is excellent yachting on the shallow broads, and the fish and

wild-fowl, too, attract many holiday-makers. There is a profusion of vegetation peculiar to marshy dists. and of great interest to naturalists. Hickling (about 1½ m. long) is the largest of the Norfolk B., and is approached from Wroxham by the Bure and Thurne Rs. and Candle Dyke. Other Norfolk B. are S. Walsham and Coltishall—both of which are well wooded round their margins; Barton, near Stalham, the area of which is diminished by the encroachment of reeds; Horsey, which was inundated by the sea in 1938; Ormsby, Rollesby, and Filby, all contiguous to each other and not far from Caistor; and Somerton. Oulton is the largest of the Suffolk B. The whole Norfolk Broad dist. is low-lying, being only 5 ft. above sea-level. Hickling Broad has twice been inundated by the sea, the first occasion being in the thirteenth century, when nine score of persons of Hickling village perished (narrated by John of Oxnead), and again in the reign of Charles II. Hickling is also famous for a chancery suit in which a local fisherman, as nominal plaintiff, attempted unsuccessfully to prove that the water was tidal so as to establish public rights of fishing and mooring. The famous bird sanctuary which surrounds and includes Hickling Broad, originally estab. by Lord Lucas in 1910 and taken over by Lord Desborough in 1926, has lately been acquired by the Norfolk Naturalists Trust. A project recently put forward by the National Trust and the Norfolk Naturalists' Trust, had for its object the formation of a block of protected marshland covering a large area of the Norfolk B. as a home and resting-place for rare wild birds. See W. A. Dutt and others, *The Norfolk Broads*, 1903, 1930; E. L. Turner, *Broadland Birds*, 1924; J. Robinson, *Broadland Yachting*, 1928.

Broadside, simultaneous discharge of the guns on one side of a ship-of-war. This method was discarded on the introduction of iron-clad turret-ships in which the great advantages are that projectiles glance off the rounded turrets and that the weight of guns and armour is more evenly distributed.

Broadside, see CHAPBOOKS.

Broad Sound, an inlet in the W. coast of Queensland, Australia. It penetrates inland for over 50 m., and its greatest width is over 30 m.

Broadstairs, seaside resort, on the E. coast of the Isle of Thanet, Kent, England, 2 m. by rail N.E. of Ramsgate. There is an orphanage, founded by the wife of Archbishop Taft. There are numerous large convalescent homes for children. Dickens was a frequent visitor, and wrote *Bleak House* after his residence here. There are sev. plaques on the walls of houses at which he lived from time to time. Pop. 16,000.

Broadsword, sword with a broad, flat blade, which is generally used for cutting, but not stabbing. It was formerly a weapon of the Scottish highlanders.

Broadway, vil. of Worcestershire, England, 5 m. from Evesham. Beautifully situated in the Cotswolds, at the foot

of B. hill. Has seventeenth-century stone houses and a building said to have been the manor-house of the abbots of Pershore. Pop. 2000.

Broadway, busy avenue of Manhattan, New York City, U.S.A. Its N. part contains the shopping centre, and to the S. is the business and financial quarter.

Broadwood, John (1732-1812), *b.* in Berwickshire, and walked to London to become a cabinet-maker there. With the Swiss, Burkhard Tschudi (whose daughter he married), he founded the great London pianoforte house (entering into partnership with Tschudi 1769, becoming sole proprietor 1783). Sev. generations of Bs. have carried on the business. B.'s great-granddaughter was Lucy B. (d. 1929), collector and editor of folkssongs.

Broadwood, Robert George (1862-1917), Brit. lieutenant-general, son of Thomas B., of Holmbush, Sussex; entered army (12th Lancers), 1881; served Dongola expeditionary force, 1896; and in Egyptian war, 1898, being present at battles of Atbara and Khartoum. B. served in S. Africa, 1899-1902, as commander of 2nd cavalry brigade. A mounted force under him was ambushed by De Wet at Sanna's Post, a number of men and guns being captured. In 1901 B. captured Gen. A. Cronje, Gen. Wessels, and other prisoners, during operations in the Free State; 1903-4 commanded troops in Natal as colonel; 1904-6 brigadier-general, commanding Orange R. Colony dist.; 1906 commanded the troops in S. China; major-general. At the beginning of the First World War he commanded the troops in E. Anglia.

Broca, Pierre Paul (1824-80), Fr. anthropologist, *b.* at Sainte-Foy-la-Grande, Gironde. He studied at the Communal College of Sainte-Foy and the Ecole Polytechnique and Faculté de Médecine of Paris. In 1846 he became assistant in anatomy to the Faculté, and in 1853 was appointed prof. of surgical pathology. At various times he acted as surgeon to the important hospitals at Paris; founded the Anthropological Society of Paris, 1859; estab. the *Revue d'Anthropologie*, 1872; founded the Ecole d'Anthropologie, 1876; member of the Legion of Honour, 1868. To him medical science owes the discovery of the seat of speech in what is commonly known as the 'convolution of B.' He was a director of public assistance during the Franco-Prussian war. There is a statue of him, executed by Chopplin, in the Ecole de Médecine. His most important publications are: *Des anévrismes et de leur traitement*, 1856; *L'Éthnologie de la France*, 1859; *Instructions générales pour les recherches anthropologiques*, 1865; *Instructions craniologiques et craniométriques*, 1875; and *Mémoires d'anthropologie*, 4 vols., 1871-83.

Brocade, name given to a richly decorated fabric, with a slightly raised pattern, often woven with gold, silver, or gilt-silver threads. Oriental tissues, made in Persia and Asia Minor, especially from the fourteenth to seventeenth century, are also called Bs. B. was made as early as the thirteenth century in Italy and

Spain. The background was of heavy silk, or of some strong material with a soft silk face, on to which a flowered pattern of many colours was woven. At a later date, about the sixteenth century, metallic and oriental fabrics became very popular. Now the word B. is applied to any rich material on which a raised pattern has been wrought. At the S. Kensington Museum there is a fine collection of old and modern Bs., which is of great interest to the decorative textile artist. Fine specimens may also be seen at various continental museums and exhibitions and at Dublin and Edinburgh.

Broechi, Giovanni Battista (1772-1826), It. naturalist, *b.* at Bassano. After holding the office of prof. of botany at Brescia he became in 1809 inspector of mines at Milan. He afterwards left Italy and went to Egypt where he held a commission as engineer, and *d.* at Khartoum. He has written sev. important books, among them being: *Conchyliologia fossile subappennina*, 1814; *Dello Stato Fisico del Suolo di Roma*, 1820.

Broccoli, or *Brassica oleracea* (It. *broccolo*, sprout), var. *botrytis*, is a cruciferous plant descended from the common cabbage; it resembles the cauliflower. It produces its young flowers in compact heads, which are closely enveloped by leaves, and consequently become rather blanched in appearance; the seeds of this plant are smaller than those of allied species. The peduncles are fleshy, and the flowers abortive; the inflorescence is used as a table vegetable, and comes into season in the autumn. Another species is *B. oleracea*, var. *italica*, the sprouting B.

Broch (A.-S. *burh*, burg; Scottish, *brough*, fortified enclosure), name applied locally to the anct. round towers or strongholds existing in the N. of Scotland. In Gaelic-speaking dists. they are called 'duns' and 'caiseals' (castles), and to antiquarians they are known as Pictish towers. There are 300 to 400 Bs., most in absolute ruins, in different parts of Scotland, the best known examples being Mousa and Clickimin in Shetland, Dun Carloway in Lewis, and Dun Dornadilla in Sutherland. The essential features of construction are alike in all cases, though there is difference of detail. The exterior diameter of the base varies between 70 and 40 ft. In the outer wall there is a small opening or doorway, about 6 ft. high, and 30-36 in. wide. This is the only opening whatever in the outer wall, and is defended by a small chamber within the wall on one or both sides of the entrance. There are, further, some distance within the opening, holes for a sliding bar to guard the entrance. The wall is about 15 ft. thick, enclosing a circular courtyard, open to the sky, in which a well is frequently found. Narrow, circling galleries, arranged in tiers, one above the other, are built into the interior of the wall, connected by a staircase which wound from the base to the summit. These galleries are lighted and ventilated from the inner area, or courtyard, sometimes called the 'well,' by means of windows placed in perpendicular rows, and

separated from each other by single slabs of stone. No B. is complete in its upper parts, so that it is impossible to tell the original height and the number of galleries built into the inner wall. Mousa has a height of 40 ft. with six galleries, and Dun Carloway, 34 ft., with five galleries. Small, beehive-shaped chambers are built round the inside of the court on the ground floor, but in some cases the wall at the base is solid, with only one aperture through which the staircase leads to the first gallery. The other chambers have for their roof the floor of the chambers above. From the tools and implements found it is thought that the B. dwellers were agriculturalists and that the Bs. were used as a refuge for themselves and their cattle

Britain and U.S.A. With a small force he compelled the Amer. general Hull to surrender (1812). He was killed in the battle of Queenstown Height.

Brook, Sir Thomas (1847-1922), Eng. sculptor, b. at Worcester. Chief pupil of Foley (opponent of formalism in sculpture), afterwards his assistant. Later he was influenced by the new romantic movement. B. executed a bronze bust of Lord Leighton, 1873, and a marble one of Queen Victoria, 1901. Among his equestrian statues may be mentioned that of the Black Prince, set up in City Square, Leeds, 1901, and that of the Maharajahs Bahadur and Ranadip Singh for the cap. of Nepal. He designed statues of Richard Baxter (for



E.N.A.

THE BROCH OF MOUSA

from plundering bands. Most authorities date the building of the Bs. to a post-Rom. period, i.e. not earlier than the fifth century. Harold, earl of Orkney, besieged Mousa about A.D. 1155, but failed to capture it. The Bs. probably suffered at the hands of the Northmen from the ninth to the twelfth century. For further information consult the *Transactions of the Society of Antiquaries of Scotland*; *Archæologia Scotica* (vol. v., 1890); and also Gordon's *Itinerarium Septentrionale*, 1720; Pococke's *Tours in Scotland* (pub. by the Scottish Hist. Society, Edinburgh, 1887), and Dr. Joseph Anderson's *Scotland in Pagan Times*, 1883.

Bröchner, Hans (1820-75), Dan. philosopher. He studied theology and philosophy, and worked for some years at the Copenhagen Univ., becoming prof. there in 1870. B. wrote a treatise on Spinoza in 1857.

Brock, Sir Isaac (1769-1812), Brit. major-general, b. at St. Peter Port, Guernsey. Served in W. Indies, Holland, and Canada. In 1806 he took command of troops in Canada in view of the imminent outbreak of hostilities between Great

Kidderminster, 1870), Robert Raikes (Victoria Embankment, 1888), Sir Bartle Frere (same place, 1896), Gladstone (Westminster Hall, 1902), Capt. Cook (the Mall, 1914), Rowland Hill, Sir Richard Temple (for Bombay), Sir Richard Owen, and Dr. Philpott. The monument to Lord Leighton in St. Paul's, and Longfellow's bust in Westminster Abbey, are further specimens of B.'s work. He designed and executed the Imperial memorial to Queen Victoria in the Mall. Among his other works are 'The Moment of Peril,' purchased under the Chantry bequest for the nation; 'The Genius of Poetry'; 'Song,' 1891; 'Eve' (Tate Gallery). B. shows great power as a portraitist; there is dignity, restraint, sympathy, and refinement in all his work. R.A., 1891; K.C.B., 1911; membre d'honneur de la Société des Artistes français.

Brocken, or Blocksberg, highest summit of the Harz Mts. in Saxony, Germany, 20 m. W.S.W. of Halberstadt. It is the Mons Bructerus of the Rom.; has an elevation of 3745 ft. above the level of the sea. It is interesting for the optical phenomenon known as 'Spectre of the

Brocken.' On its summit, according to auct. superstition, the witches met and held their revels on St. Walpurgis's Night. A railway up this mt. was constructed in 1898, and an observatory in 1895. The summit is covered with snow from Nov. to June, where there is singularly little vegetation.

Brookes, Barthold Heinrich (1680-1747), Ger. poet, b. at Hamburg. His chief poetical works were pub. in nine vols. as *Irisches Vernügen in Gott*, 1721-48. He trans. Marini's *La Strage degli Innocenti*, Pope's *Essay on Man*, and Thomson's *Seasons*. His poetry marks the changes affecting Ger. literature in the early eighteenth century. He started a simple, clear diction, and his reverential attitude towards nature and a religious interpretation of natural phenomena paved the way for Klopstock. J. M. Lappenberg pub. B.'s autobiography, 1847. See also A. Brandl's life, 1878, and Strauss's *Brookes und Reimarus* (Gesammelte Schriften, ii.), 1876.

Brockhaus, Friedrich Arnold (1772-1823), the founder of the well-known publishing firm of B. in Leipzig, and the publisher of the *Conversations-Lexikon*. He was b. at Dortmund, in Westphalia; in 1811 he started business in Altenburg, and was so successful that in 1817 he removed to Leipzig, where he combined the trade of book-printing with that of publishing. B. bought the copyright of *Conversations-Lexikon*, which had been begun by Löbel in 1796, and in 1810-11 completed the first ed. of this famous work. A new and improved second ed., which he himself ed., was received with universal favour. It was, from the first, a great success, and has been revised and kept up to date by new eds. from time to time. See H. E. Brockhaus, *Friedrich Arnold Brockhaus*, 1872-81.

Brooklesby, Richard (1722-97), Eng. physician, graduated at Leyden in 1745. As physician to the army he worked in Germany during the Seven Years war, 1756-63, and in 1764 pub. a book, suggesting what he knew from experience were necessary improvements in hospitals. After being physician-general to the royal regiment of artillery at Woolwich, he practised privately in London and proved himself a staunch friend and benefactor to Burke and Dr. Johnson, whom he attended at death.

Brockley, dist. in London, S.E. of the city. It is partly in Lewisham and partly in Deptford bor.

Brookram ('broken rock'), local name applied to certain breccias belonging to the Lower Permian age, which are found near Appleby, Penrith, Kirkby Stephen, and in other parts of the N. of England. These breccias consist of broken pieces of limestone embedded in a red sandy matrix.

Brookton, formerly N. Bridgewater, in the co. of Plymouth, Massachusetts, U.S.A., on the New York, New Haven, and Hartford railroad, 20 m. S. of Boston. Its most important industry is the manuf. of boots and shoes, but it has also manufs. of rubber goods, sewing machines, and motor cycles. Pop. 65,200.

Brookville, tn. on the N. shore of the St. Lawrence R., and co. tn. of the united cos. of Leeds and Grenville, Ontario, Canada, 72 m. S. of Ottawa. Called 'the City of the Thousand Is.' Has a fine harbour and is on the main line of the Canadian National railways, from Toronto to Montreal, and also on a Canadian Pacific branch line to Ottawa. Centre of a good dairy farm country. Has a collegiate institute and vocational school and business college. The tn. owns twenty-nine is. which are municipal parks used for camping. Industries include furnaces, hardware, electric cables, condensed dairy products, and petrol engines. The tn. was founded in 1784 by United Empire Loyalists and takes its name from Gen. Sir Isaac Brock. Incorporated in 1832 as a tn. with 1300 inhab. Pop. 11,000 (mainly Brit.).

Brockwell Park, London recreation ground in Lambeth bor. betweenulse Hill and Herne Hill. Dedicated to the public in 1892.

Brocomagus, see BRUMATH.

Brodhead, John Romeyn (1814-73), Amer. historian, b. in Philadelphia, Pennsylvania; was called to the Bar at New York, but gave up his time to research in Amer. colonial hist.; was sent to Europe to gather material for the early hist. of New York; this was ed. in fifteen vols. (1853-83) by O'Callaghan and Ferncy. B. also wrote a *History of the State of New York* (2 vols.), 1851-71.

Brodick, vil. and watering-place of Arran, Scotland, on a bay of the same name. Near it is B. Castle, seat of the duke of Montrose.

Brodie, Sir Benjamin Collins (1783-1862), Eng. surgeon, was b. at Winterslow Rectory, Wiltshire. He studied at St. George's Hospital, to which he afterwards became surgeon. He was elected fellow of the Royal Society in 1810, which awarded him the Copley medal in the following year; he was elected president of the society in 1853. B. was attendant physician to William IV. and Queen Victoria. B. wrote an autobiography, which, together with his numerous papers on medical subjects, was pub. in a complete ed. in 1865.

Brodie, William (d. 1788), famous Scottish burglar, b. in Edinburgh, the son of a cabinet-maker, who was a member of the tn. council; he succeeded to his father's business, was a deacon of the Incorporation of the Edinburgh Wrights and Masons, and a city councillor. He early acquired a taste for gambling, and frequented a low gaming-house. In 1786 he became leader of a gang, the other members of whom were George Smith, Andrew Ainslie, and John Brown, which committed a number of burglaries in 1787. In 1788 they broke into the excise office, and though they escaped undiscovered, Brown turned king's evidence, and B. was finally arrested in Amsterdam and hanged. To the end he kept a good reputation among his fellow citizens. He is the subject of Stevenson and Henley's play, *Deacon Brodie*.

Brodie, William (1815-81), Scottish

sculptor, *b.* at Banff, but spent most of his life in Edinburgh. In 1877 he was elected secretary of the Royal Scottish Academy. He specialised in portrait busts, and numbered among his sitters Queen Victoria, whose bust executed by him is in Windsor Castle, the Baroness Burdett-Coutts, and Sir James Simpson, of whom he executed the statue in Princes Street Gardens, Edinburgh.

Brodsky, Adolph (1851-1929), Russian violinist, *b.* at Taganrog. Studied in Vienna and became member of Vienna court orchestra and later conductor of Kiev symphony orchestra (1878-80). Appeared in London at Richter concerts, 1882-83. Head prof. at Leipzig conservatoire, where he formed his famous B. quartet, 1883-91. Toured U.S.A. and Canada, 1891-94. Became leader of the Hallé Orchestra and principal of the Royal Manchester College of Music, 1895. A powerful master of the violin, he was first to play his friend Tchaikovsky's violin concerto.

Brody, tn. in Ukraine, formerly of Austria-Hungary and Poland, 50 m. N.E. of Lwów. During the First World War it was occupied by the Russians on Aug. 22, 1914, and remained in Russian hands until recaptured by the Austrians on Sept. 1, 1915. During July 1916 it was again attacked by the Russians, who, overcoming both the difficulties offered by the swampy terrain and the improved Austrian defences, retook it in four days. It was also the scene of fighting in June 1941, during the Ger. invasion of Russia. Pop. 11,500, of which two-thirds are Jews.

Brodzinski, Kazimierz (1791-1835), Polish poet. Joined the Fr. army, taking part in the Russian campaign, 1812-13; 1826, prof. of Polish literature at Warsaw Univ. till it was closed, 1831. The idyllic poem *Wiesław*, 1820, is B.'s chief work. He trans. the Book of Job and Schiller's dramas. See Kraszewski's ed. of his works, 1872-74.

Broek, vil., with an exaggerated reputation for cleanliness, about 6 m. N.E. of Amsterdam, N. Holland. It has a great dairy farm. Pop. 1600.

Broekhuizen (Broukhusius), Jan Van (1640-1707), Dutch poet and scholar, *b.* at Amsterdam. His father dying when he was very young, he began as an apothecary, but forsook this employment after some years and entered the army, retiring on pension in 1697. His fame rests on his *Carmina* (Lat. poems), 1684, and *Poemata*, pub. after his death in 1712, and also on his eds. of Propertius, Tibullus, and Catullus. He also wrote a number of poems in Dutch which were pub. collectively in 1712.

Broghill, Baron, see BOYLE, ROGER.

Broglie, de, name of a prominent Fr. family of Piedmontese origin, who emigrated to France in 1643. The founder of the Fr. line of the family, François Marie, distinguished himself as a soldier both previous to and after his entrance into the Fr. service, in which he *d.* a general. His son, Victor Marie, also fought in many engagements under the flag of France, serving at one time or

another with all the great Fr. commanders of the seventeenth century. Victor's son, François Marie, however, became even a more important factor in the hist. of France than either his father or grandfather had been, and he it was who founded the ducal family, becoming both a duke and a marshal of the kingdom of France. He was *b.* in the year 1671, and joined the Fr. army at an early age, taking part in the war of the Protestant Succession in 1689, and continuing in service practically throughout it. In 1702 he continued his long service with the Fr. army, taking part in the war of the Sp. Succession, and continuing in active service throughout the whole of the war. He was present at the battle of Malplaquet and at numerous other battles during the war. On the outbreak of war in 1733 he took part in the campaigns in Italy and was in the following year made a marshal of France. He was one of the chief commanders of the Fr., but in 1735 he was superseded, since, though his tactics were always safe, he was a man of caution and seldom attempted any dashing or brilliant movements. He afterwards became governor of Alsace, and took part in the early stages of the war of the Austrian Succession (1740-48). In 1743 he retired, having, in the previous year, been made a duke. He *d.* in 1745. His son, Victor François (*b.* 1718), was by the time of his father's death recognised as one of the coming Fr. generals. He served with distinction through the war of the Austrian Succession, but he estab. his great name as a soldier during the Seven Years war (1756-63). He took part in the whole of this campaign, and was made a marshal of France and a prince of the empire for his great victory at Bergen in 1759. After the war he did not take any active part in the military life of France, being in disgrace at the Fr. court, but in 1778 he was partially restored to favour and given command of the troops who were to operate against England. On the outbreak of the revolution he became an *émigré* and fought against the revolutionaries. He *d.* in 1804. His son, Victor Claude, prince de B. (*b.* 1757), was a celebrated Fr. soldier, who adopted the principles of the revolution, and had previously fought in America, with Lafayette. After commanding the revolutionary army in Switzerland, and having been a member of the Jacobin Club and of the Constituent Assembly, he fell a victim to the Terror in 1794.

Achille Charles Léonce Victor, Duc de Broglie, distinguished as a Liberal statesman and diplomatist, was *b.* in 1785. He resided for some time after his father's execution in Switzerland, whither his mother had fled. He remained here until the death of Robespierre, when the family returned to Paris. In 1796 his mother married again, and he received at the hands of his stepfather a liberal education. He took part in the diplomatic work of the Napoleonic empire, and was a member of the council of state. In 1814 he was invited to become a member of the

Chamber of Peers by Louis XVIII. He had already had his peerage restored to him, and in 1815 he defended Marshal Ney and was the only member of his House who voted for his acquittal. In the following year he married a daughter of Madame de Staël. He took a prominent part in the politics of France between 1817 and 1830. Under the regime of Louis Philippe he was foreign secretary, and later Prime Minister. In 1836 he was defeated, and retired from his position and practically from politics. He was for a time ambas. in London, and sat in the Republican National Assembly after 1848. He was a victim of the *coup d'état*, after which he retired entirely from politics and devoted himself to literary work. His literary work, while not of outstanding merit, won for him a place in the Fr. Academy. He d. in 1870. Among his works may be mentioned, *Écrits et discours*, 1863; *Vues sur le gouvernement de la France*, 1861, and *Mémoires*, 1867.

Jacques Victor Albert, Duc de Broglie, a distinguished writer and politician, eldest son of the above, was b. in 1821. Up to 1848 he took some active part in diplomatic missions, serving both in Madrid and Rome. The revolution of 1848, however, drove him from political circles, and he devoted his time to literature, being in 1862 elected a member of the Fr. Academy. In 1871 he again entered active politics and was for a short time Fr. ambas. in London. Hostile criticism led him to resign that post, and he re-entered the Chamber of Deputies. In 1873 he became president of the council and minister for foreign affairs, and later minister of the Interior. In 1877 he again became premier, but was almost immediately forced to resign. After 1877 he devoted himself to literature and wrote a number of historical studies. He d. in Jan. 1901. Among his most important works are: *Frédéric II. et Louis XV.*, 1885; *L'Église et l'Empire romain au IV^e siècle*, 1856-66; *La Paix d'Aix-la-Chapelle*, 1892; *Voltaire avant et pendant la Guerre de Sept Ans*, 1898.

Broglie, Prince Louis Victor de, man of science; b. Aug. 15, 1892, at Dieppe; youngest child of Victor, fourth prince and fifth duc de Broglie. Like his elder brother, the sixth duke, he has devoted himself to physical science, and at the age of thirty he produced a thesis on the mechanism of the undulatory movement. Together with his brother the duke, he pub. an *Introduction to the Physics of X and Gamma Rays*. He is a master of conferences in the faculty of science in the Sorbonne; and in 1929 he was awarded the Nobel prize for physics, on account of his discovery of the undulatory nature of electrons.

Brogue (Gaelic *brog*), shoe made of coarse hide or half-tanned leather, formerly worn by the native Irish and the Scottish highlanders. The word is also applied to the pronunciation of Eng. peculiar to the natives of Ireland.

Broich, vil. of Rhineland on the Ruhr opposite Mülheim. Has railroad shops

and various manufs.; famous castle near. Pop. 9000.

Broke, Sir Philip Bowes Vere (1776-1841), Brit. rear-admiral, was b. at Broke Hall, near Ipswich. He entered the navy in 1792, and was made captain of the frigate *Shannon* in 1806. On June 1, 1813, he fought his famous duel with the Amer. frigate, *Chesapeake* (q.v.), and succeeded in flying the Brit. colours on the enemy's mast after fifteen minutes' fierce struggle. B., however, received a wound which permanently disabled him, and was obliged to retire from active service. He received a baronetcy in 1813, and two years later was created K.C.B.; promoted to the rank of rear-admiral in 1830. See his life by Dr. Brighton (1866).

Broken Hill, mining tn. of Yancowinna co., New S. Wales, Australia, about 16 m. E. of Silverton. It is the richest silver-mining centre of the continent to which Sturt referred in 1845 as a worthless country. The Hill has since produced silver, lead, and zinc to the value of £120,000,000. Eight thousand miners are employed there. Pop. 27,000.

Broken Hill Proprietary (or **B. H. P.**), Australia's one large-scale heavy industry before the Second World War, and still by far the largest. Since the previous war it had developed at Newcastle, New S. Wales, the largest steel works in the Brit. Empire, and also a second plant at Port Kembla, near Newcastle. The remarkable story of B. H. P. began in 1883, when a boundary rider working on a sheep station discovered traces of silver-lead in a corner of the station now known as Broken Hill. He induced six other men, including the station owner, to gamble £100 each on his proposal to develop the mine which he surmised to be there. The mine, in fact, turned out to be exceptionally rich. In 1885 the B. H. P. Company was formed; in 1886 it paid dividends at the rate of 63½ per cent, in 1888 126 per cent, and in 1937 it was still paying 120 per cent. In 1889 the company found difficulty in getting high-quality iron-stone for its smelters, and so leased some neglected iron deposits in Spencer Gulf, S. Australia, and exploited these for ten years, but only to provide iron for fluxing purposes. When, in 1911, the company saw that the prospects for non-ferrous mining at Broken Hill were limited, they turned their attention to the production of steel and, on the coal-fields of Newcastle, New S. Wales, began to build what was to become the largest steel plant in the Brit. Empire. Since 1935, when it absorbed its last possible competitor, it has enjoyed a monopoly in Australia. It controls the materials used in its processes; produces its own iron, limestone, dolomite, fluor spar, and coal; has built a plant to handle alloys; and owns the shipping required to move its materials to Newcastle, especially the iron ore from S. Australia. It is closely interlocked with workshops producing black and galvanised sheets, barbed wire, nails, wheels, axles, and so on through the role of steel-processing industries. In association with General Motors

Holden Ltd., a partly Amer. concern, and the B. H. Associated Smelters Proprietary of Port Pirie, it began, in 1937, the biggest aircraft development in the hist. of Australia—a project of very great value to Australia when war broke out. B. H. P. is also interested in gold-mining. It is the prin. Australian ally of Imperial Chemical Industries. B. H. P., as has been well said, 'sits at the centre of capitalistic power in Australia, a vertical and horizontal trust, and a holding company, and it certainly wields a good deal of political influence' (*Advance, Australia—Where?*, by Brian Penton, 1943).

Broken Knees, condition to which horses are liable after a fall upon what is called the knee-joint. The joint, however, corresponds to the wrist in man, and is composed of a number of delicately jointed bones. If the forelegs of a horse give way, it is apt to fall upon this joint, causing more or less severe injury. If only an abrasion of the skin occurs, the wound will cause little trouble, but if the sheath of the tendon is injured, or if the bones of the joint are fractured, healing is a slow process, and is likely to be accompanied by fever. Even if the injury is successfully treated as far as healing goes, the action of the animal is likely to be impaired.

Broker, agent employed to negotiate bargains and contracts, sales and purchases of goods, for a remuneration, commonly called brokerage. A B. does not act in his own name, nor does he have the custody of the goods about which he negotiates; he cannot sell the goods publicly, but is a middleman, negotiating privately on behalf of his principal. No personal liability attaches to him for the goods in which he deals. A B. usually specialises in one market, thus acquiring a particular knowledge which gives him an advantage over the general merchant or private buyer or seller. As well as ordinary commercial Bs., there are stock-brokers (see STOCK EXCHANGE); insurance brokers, who in general effect marine insurance policies; bill-brokers, who buy and sell bills of exchange and promissory notes, making a profit on the difference between the discount at which they have bought or sold the note and the interest at which they have borrowed to effect the deal (in which kind of transaction they act not as agents but as principals, and are not therefore bill-brokers in the older sense of that term, which meant agents who, for a commission, discounted bills in London on behalf of country bankers); shipbrokers, who procure goods on freight or charter for outward-bound ships and clear vessels at the customs (as well as acting as insurance brokers); and pawn-brokers (*q.v.*), whose business is to advance money on goods pledged as security for the loan. Consult Poley and Gould, *The History, Law, and Practice of the Stock Exchange*, 1926.

Brokerage, fee or commission given by a principal to a broker or mercantile agent as payment for a bargain concluded by him.

Bromal (CBr₃COH), yellow oily liquid formed by the action of dry bromine on alcohol. It boils at 172° and unites with water to form a solid hydrate, melting at 43°. It is decomposed by alkalis into formic acid and bromoform. The hydrate is used in medicine as a hypnotic, *i.e.* to produce sleep, in doses up to five grains, but its use is usually accompanied by gastric disturbances. In larger doses it has a dangerous poisonous action upon the heart.

Bromberg (Bydgoszcz), tn. in Poland, on the Brabe, 69 m. N.E. of Posen. The B. Canal, which connects the Vistula with the Oder and the Elbe, by joining the Its. Netze and Brabe, has opened up the trade very considerably. There are important industries, including saw-mills, tanneries, distilleries and breweries, and a trade in timber and corn. Taken by the Russians in 1944. (See EASTERN FRONT IN SECOND WORLD WAR.) Pop. 88,000.

Bromborough, urb. dist. of Cheshire, on the l. b. of the Mersey estuary, 5 m. from Birkenhead. B. Pool has wharves and the dock of Port Sunlight. Pop. (with Bebington) 27,000.

Brome, Alexander (1620-66), poet, was an attorney by profession. Besides publishing a vol. of *Songs and other Poems*, in which he freely satirised the Rump Parliament, he tried his hand, as was the fashion, at elegies, epigrams, translations, etc. As a wit he had a fair reputation.

Brome, Richard (d. 1652), Eng. dramatist. Little is known of his early life. It is certain, however, that he acted as a servant to Ben Jonson, from whom he acquired much of that writer's style and ability. The relations of master and servant seem to have changed to the warmer ties of friendship, for Jonson himself referred to him in his lines 'To my faithful servant and most loving friend.' B. wrote for the Globe and Blackfriars theatres, and for the Cockpit in Drury Lane. His best-known plays include *The Northern Lass* (1632), *The Antipodes*, *The City Witt*, *The Sparagus Garden* (1635), and *A Joviall Crew* (1641). Two posthumous collections of his plays under the title *Five New Playes* appeared in 1652 and 1659. B. collaborated with Thomas Heywood in *The Late Lancashire Witches* (1634). A good notice of B. is to be found in Ward's *English Dramatic Literature*, 1875 (vol. ii.). His particular success was achieved in comedy.

Brome-grass is the name of various species of true grasses belonging to the genus *Bromus*, occurring in temperate climates. Sov. species are common anns. in Britain, but they are of no value to the farmer. *B. secalinus* grows in fields, *B. racemosus* in meadows, *B. sterilis* and *B. mollis* in hedgerows. Some species of *Brachypodium* are called false brome-grass.

Bromeliaceæ is a monocotyledonous order of tropical plants, containing about 400 species which are of little value to man. An exception must, however, be made in the case of the species *Ananas sativa*, which is the pineapple. The leaves

of these herbaceous plants are usually borne as a fleshy rosette which fit in together to form a funnel-shaped receptacle. The inflorescence has brightly coloured bracts, and the fruit is either a berry or a capsule. The flowers are usually hermaphrodite and regular, with a perianth in two whorls of three, sepaloïd and petaloïd, six stamens, and three united carpels with numerous ovules.

Bromfield, Louis (b. 1896), Amer. novelist, b. in Mansfield, Ohio. During the First World War he served with an Amer. ambulance attached to the Fr. army from 1917 to 1919, receiving the Croix de Guerre. He won immediate notice with his first book, *The Green Bay Tree*, in 1924. His second vol., *Early Autumn*, won the Pulitzer prize of \$1000 for the best piece of Amer. fiction in 1926. *The Strange Case of Miss Annie Spragg*, pub. in 1928, consolidated his position as a writer of note. Novels include: *The Rains Came*, 1938; *Night in Bombay*, 1940; *Until the Day Break*, 1942; *Mrs. Parkington*, 1943; *Pleasant Valley*, 1944; *Stories: It Had to Happen*, 1936; *It Takes all Kinds*, 1939. Plays: *Times have Changed*, 1935; *Here To-day*, 1935.

Bromic Acid (HBrO_3), monobasic acid formed by passing chlorine into bromine-water; or by the action of dilute sulphuric acid in barium bromate; or by adding bromine to a strong solution of silver bromate. The acid is known only in its aqueous solution, forms salts called bromates, and decomposes at 100°C . into water, oxygen, and bromine.

Bromide of Potassium (KBr), colourless or white crystalline solid prepared by the action of bromine on potassium hydroxide solution. It is much used in medicine for nervous diseases such as epilepsy, delirium tremens, hysteria, sleeplessness, as well as other conditions where it is desirable to depress the nervous system, as in diseases of the skin, throat, and larynx, fibroid tumours, etc. Its excessive use leads to a condition called bromism, or brominism, characterised by skin eruptions, growing muscular and sexual weakness, mental dullness and feebleness, leading to extreme depression and melancholia. The term 'bromide' is often used of an individual who has recourse to B.P. to allay nervous excitability. Though undoubtedly of great value as a medicine, its indiscriminate use has led to an unhealthy state of mind in some sections of society. In photography B.P. is used as a restrainer, and as a source of silver bromide for the sensitive film.

Bromine (symbol Br, atomic weight 79.916, atomic number 35), element, was discovered by Balard of Montpellier in 1826 in the mother-liquor obtained after the crystallisation of salt from concentrated bittern (salt water from the marshy dists. of Bouches-du-Rhône), and has since been found to exist in all sea-water to the extent of one grain to the gallon, and in most mineral waters and salt springs. It derives its name from Gk. *bromos*, signifying stench, in allusion to its unpleasant smell. Br. is at ordinary

temps. a volatile, heavy, mobile liquid of a reddish-brown colour, giving off reddish-brown vapour and boiling at 59°C . The vapour when inhaled dilute resembles chlorine in smell and in attacking the throat and nose, but in addition it has a very harmful effect on the eyes. The liquid is very poisonous and produces burns on the skin. It is soluble in water, the solution being known as bromine water, which has a slight bleaching action, and is used in analytical chem. for oxidation purposes. The presence of a salt of Br., i.e. a bromide, can be detected by passing chlorine through the solution, when Br. is liberated, and can be dissolved out by ether. It turns starch yellow. Br. is one of the family of elements called halogens (sea-salt producers) owing to the similarity of their sodium salts to sodium chloride. The members are fluorine (F 19), chlorine (Cl 35.457), Br. (Br 79.916), and iodine (I 126.92). They are very similar in properties, and show a gradation of properties corresponding to the gradation of atomic weights. They are univalent, and severally displace one another thus: Br. displaces iodine, chlorine displaces Br., and fluorine displaces chlorine. The properties of Br. are intermediate between those of chlorine and iodine. Thus at ordinary temperatures chlorine is a gas, Br. a liquid, and iodine a solid. Chlorine and hydrogen unite slowly in daylight, but violently in direct sunlight, hydrogen and Br. need to be heated to unite, while hydrogen and iodine combine only partially. The chief source of Br. is the crude carnallite in the saline deposits of Stassfurt in Prussian Saxony and of the U.S.A. This substance contains Br. combined with magnesium, the magnesium bromide forming 1 per cent of the magnesium chloride in the crude deposit. The Br. is liberated from the bromide by chlorine, which is separately generated. The hot mother-liquor flows down a tower filled with earthenware balls, and meets an up-current of chlorine. Br. is liberated, and the vapour passes up out of the top of the tower into a worm, where it is condensed. The condensed vapour as it leaves the worm is collected in a bottle, while any uncondensed vapour passes into a tube of moist iron filings, where it forms iron compounds and none is wasted. Electrolytic methods have been employed for Br. production, as it is found that on the electrolysis of the mother-liquor all Br. comes off before any of the chlorine. In the U.S.A. Br. is extracted on a very large scale from sea-water, which is acidified with sulphuric acid and then treated with chlorine. The prin. use of Br. is in making ethylene dibromide, $\text{C}_2\text{H}_4\text{Br}_2$, a constituent of ethyl petrol. By passing hydrogen and Br. through a hot platinum tube, hydrogen bromide, or hydrobromic acid gas (HBr) is produced, also by the action of Br. on slightly moistened red phosphorus. It is a colourless, pungent-smelling gas which, when dissolved in water, forms a liquid strongly resembling aqueous hydrochloric acid. It reacts with metallic oxides, hydroxides, and carbonates to form

bromides, salts which are widely used in photography, especially the bromide of silver.

Bromley: 1. Municipal and parl. bor. in Kent, 10 m. from London, on the Ravensbourne. There is a fine Gothic church, containing the monuments of sev. of the bishops of Rochester. Bromley College provides endowed homes for forty clergymen's widows. B. high school, founded in 1883, is a public day school for girls. Pop. 48,000. 2. Dist. near Bow, E. London.

Bromley, Sir Thomas (1530-87), Eng. judge. As crown counsel he prosecuted the duke of Norfolk for treason. He succeeded Bacon as lord high chancellor. It was he who delivered the classic judgment in Shelley's case (*q.v.*), and it was he, too, who signed the warrant for the execution of Mary Queen of Scots.

Bromley, William (1769-1842), line engraver, became, in 1810, associate engraver of the Royal Academy. Besides being a constant exhibitor at the Royal Academy, he spent many years engraving the Elgin marbles, after G. Corbould's drawings. Some of his better known works are 'Death of Nelson,' after A. Davis; 'Duke of Wellington,' after Sir Thomas Lawrence; and 'Woman taken in Adultery' (Rubens).

Bromoform, or **Tribromomethane** (CHBr_3), bromine analogue is a clear heavy liquid (sp. gr. 2.77), turning red on standing, owing to formation of bromine. It was discovered by Lowig in 1932, but its true nature was discovered by Dumas. It is produced by adding bromine to alcohol or to an alcoholic solution of caustic potash. It is decomposed on boiling with caustic potash, and produces potassium bromide and potassium formate. It smells and tastes like chloroform, and by reason of its high density it is used in separating-processes in mineralogy.

Brompton, residential dist. of Kensington, London, England, between Knightsbridge and Chelsea. It contains the Brompton Oratory (served by priests of the order of the Oratory of St. Philip Neri), the Imperial Institute, S. Kensington Museums, and a hospital for consumptives.

Bromsbro, vil. in Sweden, 29 m. S. of Kalmar, near the mouth of the Brömse. Treaties were signed here between Denmark and Sweden in 1541 and 1645.

Bromsgrove, mrkt. tn. of Worcestershire, and 13 m. S.W. of Birmingham. It is situated in a pleasant, well-wooded country, has an Edward VI. grammar school, and a fine church in the Decorated Eng. style. Wrought nail-making and other minor industries are carried on. Pop. 10,000.

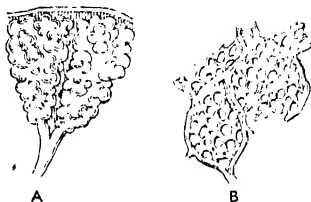
Bromus, see **BROME-GRASS**.

Bromwich, West, see **WEST BROMWICH**.

Bromyard, small mrkt. tn. in Herefordshire, 10½ m. E.S.E. of Leominster. Pop. urb. dist. 1600; ecclesiastical dist. 2700.

Bronchi and Bronchitis. The trachea or windpipe divides into two main branches, which are ringed with gristle in the same manner as the trachea itself. These main branches lead to the lungs,

but are themselves split up into a large number of smaller branches which at the surface of the lung have only capillary dimensions. The two main tubes are called the bronchi, but this name is often applied to all the tubes of the system, which are also called bronchial tubes. The right bronchus lies in a more horizontal position than the left, and since the right lung is larger than the left there is a corresponding difference in the calibre of the respective tubes. The bronchi are lined with mucous membrane, which is a continuation of that lining the trachea, larynx, epiglottis, and nostrils. The inflammation of this membrane in the bronchial tubes is known as 'bronchitis,' and increases in seriousness as it passes from the wider tubes to the narrower ones.



A, a bronchial tube, opening into two collections of air-sacs; B, the arrangement of the blood-vessels which lie underneath the epithelial lining (not shown) of two air-sacs.

There are three types of bronchitis which may be treated separately, viz. (1) acute bronchitis, (2) capillary bronchitis, (3) chronic bronchitis.

Acute bronchitis is a common disease in this country, and is usually obtained by exposure to cold or sudden change from warm to cold temp. A moist cold is the more likely to produce it, and it flourishes on a damp soil. At the start its appearance is the same as that of an ordinary cold, but the symptoms soon point to something of a more serious nature. These are feverishness, tightness of the chest, and short wheezy breathing. There is a constant cough, and at first a scanty and frothy expectoration with headache and feeling of weakness. The expectoration afterwards becomes less viscid and more copious, after which the patient's condition may be expected to improve. At the beginning of the attack, by placing an ear or the stethoscope to the chest, a roaring noise will be heard, due to the passage of the air through the swollen tubes lined with thick mucus; but later on this noise will be replaced by a bubbling, showing that the expectorant is more copious and liquid. A whistling noise in the tubes is a serious symptom, as it indicates that the inflammation has reached the smaller tubes, when the danger of restricted respiration is increased. Expectoration should be encouraged as tending to the relief of the

patient, and may be made easier by moistening the air of the room by means of bronchitis kettles. Hot fomentations applied to the chest give great relief, and rubbing it with liniment is also useful.

Capillary bronchitis is a particularly dangerous form of the above, and is the cause of death to many very young children. In it the very smallest tubes are inflamed, and the breathing being stopped, suffocation occurs. It can be distinguished by the bluish appearance of the child and its manner of struggling for breath.

Chronic bronchitis is a condition very often found in old people. It consists in the regular recurrence of bronchitis, accompanied by a backing cough but no feverishness, in the autumn, and its continuance throughout the winter, very often persisting throughout the whole year. An attack of acute bronchitis is very liable to increase the susceptibility of the sufferer, so that great care should be taken in all cases in order that it may not degenerate into the chronic variety. Chronic bronchitis leads to an alteration in the breaking down of the air tubes, and hence a breathlessness more or less always present. The mucous membrane of the tubes becomes thickened and often ulcerated, and there is a copious fetid expectoration. Chronic bronchitis is liable to be confused with pulmonary tuberculosis, and it is important in all cases that the sputum should be examined for the tubercle bacillus.

Bronchitis may be caused by other means than the catching of a chill. Thus millers, grain shovellers, and all engaged in dusty occupations have been found to be more subject to the disease than others. It has been found that this is caused by the irritation due to the passage of dust (particularly vegetable dust) into the bronchi and the lungs. Then again bronchitis may accompany constitutional weakness such as gout or syphilis, or accompany an attack of typhoid fever or measles. All forms of the disease are dangerous in that they are likely to spread, and medical attention should always be obtained. The treatment will depend on the nature and extent of the ailment and on the state of the patient, and no special remedies can be given without knowing the circumstances of the case. It is important that the patient should be well nourished and kept in a room of warm and equable temp.

Bronchocele, see GOITRE.

Brondesbury, dist. of London, England, in the urb. dist. of Willesden.

Brongniart, Alexander (1770-1847), eminent Fr. chemist and mineralogist, was b. in Paris, the son of an architect. In 1797 he was appointed prof. of natural hist. at the Collège des Quatre Nations. Three years later he became director of the porcelain factory at Sèvres, which under his management became known far and wide for its work. While retaining this post till the end of his life, he by no means abandoned purely scientific studies, and he succeeded Haüy as prof. of mineralogy in the Museum of Natural Hist.

It was he who proposed the div. of reptiles into the four classes of Saurians, Batrachians, Chelonians, and Ophidians. Among his most notable works were his *Traité des arts céramiques*, and the *Description géologique et minéralogique des environs de Paris*, in which he collaborated with Cuvier. He d. in Paris on Oct. 7.

Broni, tn. of Lombardy, Italy, 10 m. S.E. of Pavia. It has mineral springs, and near the tn. is the castle of B. Pop. 7000.

Bronkhorst, or Bronkers Spruit, streamlet in the Transvaal, 40 m. from Pretoria. Scene of a treacherous Boer ambush in the S. African war, 1880. A Brit. detachment was shot down before war had been declared.

Bronn, Heinrich Georg (1800-62), Ger. geologist, was b. at Ziegelhausen, near Heidelberg. He devoted himself largely to palæontological studies, and his *Index Palæontologicus* contains a record of fossils that has proved of great service to palæontologists. He was successively prof. of physics and lecturer on zoology at Heidelberg Univ.

Bronstein, Leiba Davuidov, see TROTSKY, LEN.

Bronte, tn. of Sicily, in the prov. of Catania, from the cap. of which it is distant 33 m. N.W. by rail. It is situated on the W. slopes of Mt. Etna. The dist. produces wine, and has some trade in oil and silk, in addition to manufs. of woollen cloths and paper. Lord Nelson was created duke of B. in 1799 by Ferdinand IV. of Naples. Pop. 20,000.

Brontë, Charlotte, Emily, and Anne, novelists and poetesses, were three gifted members of a singularly unfortunate family. Of the three, Charlotte was long regarded as the most brilliant, and her work gained her a place among the leading novelists of her time; but Emily's *Wuthering Heights* is a story of remarkable reality and imagination. Anne had not the intellectual force of her sisters. Their strength and originality have kept for them a leading place in Eng. fiction which seems likely to prove permanent. Their father, the Rev. Patrick B., was Irish, their mother, Maria Branwell, a native of Cornwall. The two eldest children of the marriage, Maria and Elizabeth, were b. at Hartshead in Yorkshire; the rest, Charlotte (b. April 21, 1816), Patrick Branwell (1817), Emily (1818), and Anne (1820), at Thornton, near Bradford. In 1821 the family removed to Haworth, in Yorkshire, to the living of which Mr. B. had been presented. In this lonely place, on the border of the bleak Yorkshire moors, the children spent their youth. Their father was naturally of an austere disposition, and this was intensified by the death of the mother in 1821. Henceforward he spent most of his time in his own room, and allowed the household management to be in the hands of his eldest child, a girl of eight. This loneliness encouraged the children in imagining stories, and so we find them all interested in production of a juvenile magazine, Charlotte being specially versatile. In

1824 the girls were sent to a school for the daughters of clergymen, recently opened at Cowan's Bridge. Charlotte has described it as Lowood in *Jane Eyre*, and herself declared that her account was in no respect exaggerated. There was no attempt to provide wholesome food for their bodies or suitable training for their minds. The Bs. suffered intensely, and in 1825 the two eldest girls were removed. Their constitutional weakness had made them easy victims to the Spartan regime of the school, and both d. soon after their return home. The younger girls left the school in the autumn of the same year, and on Charlotte in turn devolved the duty of superintending the home and the younger children. She stayed at Haworth until 1831, and then went to a school at Roe Head house, where she later became a teacher, and spent some of the happiest years of her life. Again we have references to this period in *Jane Eyre*. Some of the acquaintances made now became her lifelong friends. In 1835, however, her health gave way, and she had to resign her post. An aunt suggested that the sisters might attempt a small private school, since Charlotte found that the position of governess in a private house was quite unsuited to her. It was impossible to contemplate this without having some knowledge of Fr., and so from 1842 to 1844 Emily and Charlotte resided in Brussels. The period seems to have had little effect on the younger sister, as far as her subsequent literary work was concerned, but Charlotte studied not only the language, but the people, to be reproduced afterwards in living characters in *Villette*. During their separation, while Charlotte was in Brussels, and Anne in a situation as governess, they had been quietly pursuing their favourite occupation; and in 1843 they seem to have first discovered each other's poetical efforts. In the following year they issued a vol. of poems, by 'Currer, Ellis, and Acton Bell,' each one keeping her own initials. The little book was almost ignored, though what notices it did receive were not unkind. There is little real genius in it, with the exception of a number of pieces by 'Ellis Bell.' The young writers, however, were not discouraged, but forthwith each proceeded to write a novel. Charlotte's was *The Professor*; Emily's, *Wuthering Heights*; Anne's, *Agnes Grey*. The work of the two younger sisters was accepted; Charlotte's was rejected on the ground that the plot was too slight, but favourable consideration was promised to a longer novel. Nothing daunted, she began *Jane Eyre*, which was accepted by Messrs. Smith, Elder & Company in 1847. The success of the book was extraordinary. Charlotte had not cared for it, since its sensational plot was, she thought, unsuited to her powers. But the unusual characterisation, the masculine force of expression, and the powerful use of dramatic situations, took the reading world by storm. The name and personality of 'Currer Bell' were eagerly canvassed; but it was not until the publication of her

second book, *Shirley*, that the secret was revealed. In *Jane Eyre*, and later in *Villette*, she had made a more or less faithful autobiographical study. In *Shirley* (1849) she attempted to portray the character of her sister Emily. It abounds in humour, and is a delightful story, but it is said that she was deeply wounded by the reviews passed upon it. In the year between *Jane Eyre* and *Shirley* she had been passing through the most tragic period of her life. For years the only brother, Branwell B., had been a trial to his sisters. He was certainly not as gifted as they, and it has been said in his defence that the austerity of the Yorkshire parsonage and



CHARLOTTE BRONTË

the melancholic tendencies of his sisters were enough to excuse him much. Certain it is that when Charlotte returned from Brussels she found him a hopeless slave to the drink habit, and the succeeding years, to his death in Sept. 1848, marked only a decline in his manhood. In Dec. of the same year, the brilliant but morbid genius Emily followed, and in 1849 the gentle Anne. Charlotte alone was left of the whole family. The fame which had disclosed her name in 1849 brought her many friends, and gave her the passport to the best literary society of London, but her retiring nature led her to prefer life in the north country. In 1853 appeared *Villette*, her most charming story, showing her excellences and defects more plainly than either of the others. It is a better study of herself than *Jane Eyre*, and its quiet, delightful humour is more evident. 'Monsieur Paul Emmanuel' is her best creation, while her description of her school-teaching experiences is marked by shrewd characterisation. The chief

fault of the book is in the plot, if, indeed, there can be any plot in a story whose interest centres chiefly in persons and not in action. The attention of the reader is taken by one set of characters only to be drawn off by interest in the fortunes of another. We are first of all engrossed by Lucy and Dr. John; then by M. Paul and his connection; again by the worthless beauty of the school; then by Paulina Home and her fortunes. The only continuity is gained by the association of Lucy with all of these, but the book does not lose in interest; rather, we feel the keen pleasure of making new acquaintances continually. *Villette* was Charlotte's favourite book, though it was not her greatest. It lacks the fire of enthusiasm, the daring of plot, the dramatic intensity of *Jane Eyre*, but its native kindness and gentle treatment lend it distinction. In 1854 Charlotte married Arthur Bell Nicholls, the curate of Haworth. He proved a kind partner, although he was opposed to the continuation of her literary work. She seems to have spent the last year of her life very happily, and d. on March 31, 1855. The usual comparison with Jane Austen is almost inevitable in connection with Charlotte B.'s work, since there is so evident a similarity between. Both were careful artists in words, and both were more at home with everyday types of humanity than with wild adventure. Both were rather portrait-painters than makers of plots. On the other hand, Jane Austen is far more a novelist of the tea-table than Charlotte B. The latter had far more dramatic power and more vigour; her work was, in a word, more ambitious than that of the earlier writer. Jane Austen wisely confined herself to the parlour and parlour topics; Charlotte B., if she did not range much farther afield, yet shows a power of dramatic suggestion which is quite unlike anything in *Pride and Prejudice* or its companions. Emily B.'s genius was of a more gloomy nature than that of her sister. *Wuthering Heights* (1847) is an extraordinary piece of work, one which fascinates by its strange wildness of treatment. Her characters may be unreal and strained, but the spirit of the bleak moor has seldom been better expressed. Her poetry, apart from her celebrated *Last Lines* and *The Old Stoic*, gives little indication that she was one of the band who 'sing because they must.' Anne, the youngest, was the gentlest if least intellectual. Her two novels, *Agnes Grey* (1850) and *The Tenant of Wildfell Hall* (1848), are far weaker in treatment and texture than any of her sisters' work, her poetry, also, being below the average of that of Emily B.

There is a memorial to the B. sisters in Westminster Abbey, London. It is in the Poets' Corner, placed to the right of the Shakespeare memorial. The plaque was installed in 1939 and handed over to the abbey authorities in 1947. It is of Huddleston stone, 2 ft. square, and bears the final line from Emily's *Old Stoic*: 'With courage to endure.' The 1932 ed. of the collected works of the B. sisters was ed. by

T. J. Wise and J. A. Symington, in 20 vols. This includes, besides the novels and poems, life and letters (4 vols.), unpublished works (2 vols.), and a vol. of bibliography. See also C. K. Shorter, *Charlotte Brontë and her Circle*, 1896; C. Brontë and her Sisters, 1905, and *The Brontës: Life and Letters*, 2 vols., 1908; May Sinclair, *The Three Brontës*, 1912; B. E. Dimnet, *The Brontë Sisters*, 1924 (trans. from Fr. ed., 1910); I. C. Clarke, *Haworth Parsonage, a Picture of the Brontë Family*, 1927; E. F. Benson, *Charlotte Brontë*, 1932; H. M. Delafield, *The Brontës: their Lives recorded by their Contemporaries*, 1935; G. E. Harrison, *Haworth Parsonage, a Study in Wesley and the Brontës*, 1937; F. E. Ratchford, *The Brontës' Web of Childhood*, 1941; P. Bentley, *The Brontës*, 1947; Laura T. Hinkley, *The Brontës: Charlotte and Emily*, 1948. For juvenilia of Charlotte B. see Fannie E. Ratchford, *Legends of Angria*, a compilation from early writings, 1933.

Bronx, The, formerly a dist. in Westchester co., New York; since 1898 northernmost of five bors. of New York city. Bounded by Harlem, Hudson, and East Rs., and Westchester co. Area nearly 40 sq. m. Contains B. Park, with its fine zoological and botanical gardens. Pop. 1,265,000.

Bronze, one of the earliest known alloys, formed of copper and tin in varying proportions, and often containing small quantities of lead, zinc, manganese, iron, and silicon. It is harder, more fusible, and less malleable than copper. The prin. varieties are gun-metal, containing 16 of Cu to 1 of Sn with a little zinc; bell-metal, 3 to 5 of copper with 1 of tin; speculum metal, 2 to 2½ of copper to 1 of tin; statuary-bronze, of which a representative composition is copper 78.5 per cent, tin 2.9 per cent, zinc 17.2 per cent, lead 1.4 per cent. Brit. B. coins are copper 95 per cent, tin 4 per cent, and zinc 1 per cent. B. is also used in machinery bearings and for plungers, etc. Phosphor-bronze is gun-metal to which a slight trace of phosphorus is added. See H. C. Dews, *The Metallurgy of Bronze*, 1930.

Bronze Age. This name is usually applied by archaeologists to that period in the hist. of mankind when the metal predominantly used in the production of weapons and general utensils was bronze. It is usually held to have come between the Stone Age and the Iron Age, but these ages are generally admitted now to have overlapped. The age itself cannot be said to denote any chronological period in the hist. of civilisation, to one race the age came earlier than to another, and until quite recently the Mexicans and Peruvians were still in the B. A. It can only be regarded as a distinct period in the culture of the human race. On the other hand, there are many archaeologists who deny the existence of a definite period of the B. A., and there is a good deal to be said on their side. Admitting, however, that the Stone, Bronze, and Iron Ages overlapped, the argument that no distinct B. A. existed must fall to the ground,

since the 'mixed finds' can be accounted for in this way. But, on the other hand, an argument for which much can be said is that which denies the existence of a distinct B. A. because of the scarcity of tin in many places where 'bronze finds' have been made, and points out that no copper implements have been found. The upholders of this argument consider that it is preposterous to jump from a Stone to a Bronze Age without an intermediate Copper Age. This argument is usually met with the reply that bronze was introduced into various countries from outside and from one of the older civilisations. The immediate advantage of a mixture of copper and tin over copper by itself

in the British Isles, 1926; V. G. Childe, *The Bronze Age*, 1930, and *Prehistoric Communities of the British Isles*, 1940; W. B. Wright, *Tools and the Man*, 1939; J. and C. Hawkes, *Prehistoric Britain*, 1948.

Bronze-wing is a name applied to many Australian species of the pigeon family, Columbidae. *Phaps chalcoptera* is the common B., *P. elegans*, brush B., and *Ocyphaps lophotes*, crested B.

Bronzing, name given to various processes by which a bronze-like or other metallic surface is given to objects of metal, plaster, or wood. Plaster figures are made to have an appearance of old bronze by first painting green with paint



BRONZE AGE CAULDRONS, BRITISH MUSEUM

These gracefully formed bronze utensils were found in the River Thames, near Battersea.

would immediately be seen. It is, however, also interesting to notice that the weapons of the B. A. have a distinct likeness to weapons of the E., and this goes far to verify the theory that the manufacture of bronze was brought from the outside. The chief characteristics of the period are, first, that in size and design the weapons of the B. A. differ almost entirely from those of the earlier Stone Age or the later Iron Age. The method of ornamenting the bronze is also characteristic of the age, consisting principally of concentric circles and spirals. The age was an age of cremation, and differed also in that respect from the Stone Age, during which burial had been the general rule. The pottery of the period is handmade and usually ornamented, the decorations being impressed on the pottery before it was fired. The most common bronze implements of the period are swords, daggers, awls, hammers, and arrowheads. Books: Sir J. Evans, *The Ancient Bronze Implements, Weapons, and Ornaments of Great Britain and Ireland*, 1881; Lord Avebury, *Prehistoric Times*, 1900; R. Munro, *Prehistoric Britain*, 1913; M. Stephenson, *A List of Monumental Bronzes*

mixed with shellac and then painting over with bronze powder, especially the more prominent parts. This bronze powder consists of finely divided brass, copper, aluminium, or other metal to which a particular depth of shade has been given by oxidation. New metal articles are made to have the green appearance so admired in bronze antiques by brushing over with a solution of sal-ammoniac and salt of sorrel boiled in vinegar. Again, metal articles can be made almost any colour by immersions in suitable solutions such as platonic chloride. In printing, the design is printed with shellac instead of ink and the sheet treated with bronze powder, any surplus being brushed off carefully.

Bronzino, Il (Angelo Allori) (1502-72), It. painter, pupil of Jacopo da Pontormo. His work is chiefly portraiture, and recognised as better than that of his contemporaries. His best-known painting is 'The Descent of Christ into Hell,' in the Uffizi Gallery, Florence, and there are also examples of his work in the National Gallery, London.

Bronzite, a crystalline mineral with a lustre giving it a resemblance to bronze. It is classed as a pyroxene of the rhombic

section and is similar in composition to enstatite (which is magnesium silicate), but in addition contains 5 to 14 per cent of protoxide of iron. It is the sixth and most infusible mineral on Von Kobel's scale of fusibility, being fusible only in very small flakes before the blow-pipe. It is very slightly pleochroic and is foliated. Its presence is fairly common in igneous rocks.

Brooch, ornamental dress-fastening, usually consisting of a disk or a semi-circle, with a fastening of the safety-pin type attached to it. Bs. are of great antiquity, and were once worn by men as well as by women. The earliest Bs. were of bronze, and were often crude representations of animals. The early Bs. of Scotland and Ireland were of the ring shape, and often displayed rich ornamentation and fine workmanship. Sev. admirable examples are preserved among the highland families of Scotland, while one of the best Irish examples of these old Celtic Bs. is the Tara B. which is to be found in the museum of the Royal Irish Academy, Dublin. Early Bs. have also been found in Scandinavia and parts of the S. of Europe, where they seem to have originated.

Brooke, Frances (*née* Moore) (1724-89), Eng. novelist, wife of a chaplain to the Eng. Army in Quebec. Wrote first *The History of Lady Julia Mandeville* (1763), which is notable for its descriptions of Canadian scenery. In her next novel, *The Excursion*, she made a butt of Garrick the actor. Afterwards wrote plays, the best of which were *The Siege of Sinope* (1781) and *Rosina* (1783), the latter a musical comedy.

Brooke, Henry (1706-83), Irish writer. He was the son of a rector of Killinkere, Cavan. He was educated at Trinity College, Dublin, which he entered in 1720. In 1735 he pub. a poem called *Universal Beauty*. In 1739 he wrote a tragedy, *Gustavus Vasa*, which, though rehearsed, was never performed, for one of the characters, Trollio, was taken to represent, Sir Robert Walpole. The play had a strong patriotic atmosphere and was afterwards performed in Dublin. During the 'Forty-five' he received as a reward from the gov. the position of barrack-master at Mullingar, for his attitude towards the Jacobites. His novel, *A Fool of Quality*, was his most popular work. John Wesley and Charles Kingsley thought highly of it. It lacks many of the qualities of the best fiction, but it is forcibly and clearly written, and contains much sound and progressive thought on social problems. An ed. of this work was pub. in 1859 by Charles Kingsley, in whose extremely laudatory preface will be found all the information we have on B.'s life. B. *d.* at Dublin seriously affected by his wife's death, which evidently accentuated a mental debility of some years' standing.

Brooke, Sir Alan Francis, *see* ALAN-BROOKE, BARON.

Brooke, Baron, *see* GREVILLE, SIR FULKE.

Brooke, Sir James (1803-68), Rajah of

Sarawak, was b. at Coombe Grove, near Bath, on April 29, his father being in the service of the E. India Company. After being educated at Norwich, he entered the E. India Army in 1819, and, after being seriously wounded in the Burmese war, he finally quitted the service in 1830. While travelling in the E. he conceived the idea of putting down the plague of piracy in the beautiful is. of the E. Archipelago and bringing the blessings of civilisation to the inhab. Needless to say, no one but a very remarkable man, and one filled with the spirit of adventure, would have ever thought seriously of carrying out such a project, but B. tried and succeeded. Inheriting £30,000 on his father's death in 1835, he equipped a yacht, carefully trained his crew, and, after preliminary cruises, sailed in Oct. 1838 for Sarawak, on the N.W. coast of Borneo. On arrival he found some of the native tribes in revolt against the sultan of Borneo. He assisted in putting down the rebellion, and was rewarded with the title of rajah of Sarawak. He immediately set to work to reform the prov., and his excellent gov. soon brought civilisation and prosperity in its train. He pursued vigorous methods against the pirates, but the rigour of his crusade brought him into trouble with the Brit. House of Commons, and he was charged with receiving 'head-money' for the pirates who were slain. After inquiry, however, he was exonerated. He was appointed governor of Labuan when that is. was purchased by the Brit. Gov. He received the honorary degree of D.C.L. from Oxford, and was created K.C.B. in 1848. He *d.* on June 11 at Burrator in Devonshire, an estate which had been purchased for him by public subscription. He was succeeded in Sarawak (*q.v.*) by a nephew.

Brooke, Rupert (1887-1915), Eng. poet, was b. Aug. 3, at Rugby, where his father, Wm. Parker B., was a house-master. B. attended Rugby School, and went to King's College, Cambridge, in 1906. Cambridge bored him; but he assisted the Marlowe dramatic group, acquired a 'William-Morris' sort of Socialism, and took 2nd classical tripos in 1909. He lived at Old Vicarage, Grantchester—a place celebrated in his poem *Grantchester*. Early in 1911 he visited Germany and Italy; his first vol. of poems was pub. in Dec. In that year unremitting literary work in London resulted in a nervous breakdown. During 1912-13 he moved in distinguished literary circles in London. After being made a fellow of King's, March 8, 1913, he visited U.S.A., Canada, Hawaii, Fiji, and New Zealand, returning to England just before the outbreak of war. With a commission in the Naval Div., he was at the defence of Antwerp, Oct. 1914; and, after wintering at Blandford with the div., accompanied it on its voyage to the Dardanelles. He was sunstruck, and, developing blood-poisoning, was put ashore on the is. of Skyros in the Aegean, where he *d.* April 23, 1915.

Besides his poems (collected 1918), B. wrote: *John Webster and the Elizabethan*

Drama (pub. 1916) and *Lithuania, a one-act drama* (pub. 1922). His best-known poem is *Sonnet V. of the 1914 batch*, but it does not exhibit his habitual peculiarity of mingling humour with beauty. He retailed one of Julian Grenfell's soldier-stories with the remark: 'It seems to me to express perfectly that insularity and cheerful atheism which are the chief characteristics of my race.' A good sketch of his winning personality will be found in the collected essays of Mr. John Drinkwater.

Brooke, Stopford Augustus (1832-1916), was b. at Letterkenny in Donegal, Ireland, and was educated at Trinity College, Dublin. There he carried off the prize for divinity and also for Eng. verse. He was ordained in 1857 and speedily received preferment. After holding various benefices in London, he was in 1863 appointed chaplain to the Princess Royal at Berlin. After his return he became minister at St. James's Chapel, York Street, a position he held until 1875, when he was appointed chaplain to Queen Victoria. He seceded from the Church of England in 1880, and was until 1894 Unitarian minister at Bedford Chapel. He made his mark quickly as one of the most prominent of Eng. men of letters. His chief publications are: *The Life and Letters of the Rev. F. W. Robertson*, 1865; *Freedom in the Church of England*, 1871; *Theology in the English Poets*, 1874; *English Literature*, 1876; *Riquet of the Tuft*; *a Love Drama*, 1880; *The History of Early English Literature*, 1892; *Tennyson*, 1900; *The Poetry of Robert Browning*, 1902; *On Ten Plays of Shakespeare*, 1905; *Studies in Poetry*, 1907; *Ten more Plays from Shakespeare*, 1913. Late in life he took up painting, and succeeded remarkably. See L. P. Jacks, *Life and Letters of Stopford Brooke*, 1917.

Brook Farm, in Massachusetts, 8 m. S.W. of Boston, became in 1840 the scene of a communistic experiment, inspired by the transcendentalism of the time. The attempt was organised by George Ripley, who gathered around him a number of highly educated men and women to carry into practice the ideal of 'a more natural union between intellectual and manual labour.' Hawthorne resided on the farm for some time, and it was visited by Emerson and other well-known men of the day. The attempt ended in failure, and was abandoned in 1847.

Brookfield, tn. in Linn. co., Missouri, U.S.A. Pop. 6,100.

Brookings Institution, Washington, was formed in 1927 by the union of two institutes for economics and gov. research with the Robert Brookings School of Economics. Political economy and social science are the main objects of study at the B. I., which is a research centre for graduate students and also for foreign students who come to Washington to avail themselves of the state documents there, invaluable for legal, social, and governmental research. The B. I. is well endowed, and Robert Brookings, the founder, was the first chairman in 1928.

Brookite, trimorphous form of tita-

nium oxide (TiO₂). It is found in small brownish black, orthorhombic crystals in igneous rocks and is named after H. J. Brooke, an Eng. mineralogist of the early nineteenth century. Occurs especially in the Tyrol and Arkansas.

Brooklands, chief motor-racing track in England; situated near Weybridge, Surrey. Disused after the Second World War. It was used not only for motor racing but also for testing engines. Its circuit is 3½ m. and the width 100 ft. It was opened in 1907. See A. P. Bradley and M. Burn, *Wheels take Wings*, 1933.

Brooklime (*Veronica beccabunga*), species of speedwell. It is a perennial plant, belonging to the order Scrophulariaceae, and grows in ditches and by the edge of streams and ponds. The flowers are blue, and are arranged in axillary racemes; the leaves are opposite and are oblong in shape.

Brookline, tn. in Norfolk co., Massachusetts, U.S.A., a wealthy residential suburb of Boston, with some manufs. Pop. 49,750.

Brooklyn, formerly a city, is, since 1898, a bor. of New York City, U.S.A. It is situated on Long Is., opposite Manhattan bor. The two bors., between which flows the East R., are connected by steam ferries and the B. suspension bridge (completed in 1883). The Broadway, B., and Manhattan are joined by the Williamsburg bridge, 118 ft. wide, which is the largest of its kind, and has track-ways for every form of passenger and vehicular traffic. Two other great bridges, the Manhattan and the Queensborough, join the bors., and sev. tunnels or 'subways' run below the East R. The water front of B. is 35 m., whilst its docks, lined with immense warehouses, grain elevators, etc., are very extensive. The two dry docks are sufficiently large to admit the greatest vessels. Besides carrying on an enormous import and export trade, its manufs. are the fourth largest in America, embracing sugar-refining, brewing, carpets, steam-boilers, glass, chemicals, clothing, lace, paper, etc. Among its many public buildings and charitable institutions may be mentioned the City Hall, of white marble, the Institute of Arts and Sciences, the Marine Hospital, and a U.S. navy yard, the chief naval station of America. B. is celebrated alike for its schools, including the Polytechnic for boys and the Packer Institute for girls, and its churches of all denominations, where the most distinguished preachers officiate. The city is very popular as a residential suburb of New York. It has also two public pleasure-grounds, Washington Park and Prospect Park. The latter extends over 540 ac., and has two splendid boulevards. It lies on rising ground at the S.W. of the city. Moreover, Greenwood Cemetery (400 ac.), besides possessing many splendid monuments, is noted for its beauty. The Dutch of New Amsterdam first founded the colony of B. (Breuckelen) in 1636. It was incorporated as a tn. in 1816 and as a city in 1834. B. bridge cost 25,094,577 dollars and is 6016 ft. in length. B. was long known as the City of Churches, but

is now also a city of homes. The pop. is 2,560,000. It has sixty-two parks, playgrounds, and squares. 395,000 persons are buried in Greenwood Cemetery. The Soldiers' Monument was erected in memory of 148,000 soldiers who d. in the Civil war. The navy yard is the foremost in the country. The Children's Gardens contain a herbarium of 150,000 specimens. A noble monument in Prospect Park is in memory of the men and women of B. who d. in the First World War. B. public library contains 975,000 vols. The old B. Heights section of the tn. has changed rapidly from a residential to a bustling business and apartments house dist. See also NEW YORK CITY.

Brooklyn Institute of Arts and Sciences has grown out of the Apprentices' Library Association, which was founded in 1824. The present institute was incorporated in 1890, and its object is to encourage every manifestation of art and science, especially as applied to daily life, and to provide facilities for any one wishing to study any branch of art or science. For this purpose the B. I. is divided into a number of departments under various heads. Courses of lectures, etc., are organised and command a large attendance. The Brooklyn museum, comprising exhibits in the fine arts, in natural science, and in ethnology, was first opened under the auspices of the B. I. in 1897. The museum, which includes a children's museum, is continually expanding, and among its activities numbers the publication of science bulletins, memoirs of art and archaeology, and a quarterly periodical. The museum library contains 22,000 vols., and adjoining the museum are the Botanic Gardens of over 50 ac., visited by more than a million people each year.

Brooks, Charles William Shirley (1816-1874), journalist and novelist, was b. in London on April 29. Beginning life as an articled clerk in a lawyer's office, he forsook law for journalism, and after a time became connected with the *Morning Chronicle* as parl. reporter. He became connected with *Punch* in 1851, contributing 'The Essence of Parliament,' and he succeeded Mark Lemon as editor in 1870. He wrote various plays and novels, and pub. the results of a Russian tour in *The Russians of the South* (1854). His novels include *The Gordian Knot*, 1860; *The Silver Cord*, 1861; and *Sooner or Later*, 1868. Life by G. S. Layard, 1907.

Brooks, Maria (1795-1845), Amer. author, b. at Medford, Massachusetts, U.S.A., was a friend of Robert Southey, who praised her work and called her Maria of the West, after which she wrote under the name of Maria del Occidente. She pub. poems entitled *Judith*, *Esther*, and *other Poems* (1820), *Zophiel* (1834), *Idomen*, or *The Vale of Yumuri* (1843). See Griswold, *Female Poets of America*, 1849.

Brooks, Phillips (1835-93), Amer. preacher and author, b. at Boston, Massachusetts. He entered the Protestant Episcopal Church, and first at Philadelphia, and later as rector of Trinity Church, Boston (1869-91), he estab. a high reputation as a preacher. He be-

came bishop of Massachusetts in 1891. He pub. various vols. of sermons and some well-known hymns.

Brooks, William Robert (d. 1921), Amer. astronomer. Prof. of astronomy, Hobart College, and director of the Smith Observatory, New York. Discovered many new comets, some of which are named after him.

Brook's Club, see ALMACK'S.

Brookwood, part of par. of Woking, Surrey. Noted for asylum for pauper lunatics. Immediately adjoining the railway line is the London Necropolis Cemetery. First public crematorium in England erected here, 1874.

Broom, see BRUSHES.



Broom is the name given to sev. species of leguminous plants, but chiefly to those which belong to the genus *Cytisus*, a native of Europe and the Mediterranean. The common B. of Britain is *C.* (or *Sarothamnus*) *scoparius*, an evergreen shrub in which the leaves have been reduced to scales. It grows in very poor soil, and attains a height of about 3 ft.; the flowers are bright yellow and in structure resemble those of the pea (papilionaceous); the fruit is a dark brown legume with a curious explosive mechanism. The flowers are devoid of nectar, and are pollinated by insects which, attracted by the bright colour, visit the flowers to obtain food in the form of pollen. The leaves in the lower part are divided into three leaflets, but the upper scale-like leaves are simple; the wood is a dark greeny-black, and is used in making besoms. *Cytisus albus*, the white B., is a native of Portugal, as is *C. patens*, the falsely named Irish B.; *C. proliferus albus*, a Sp. species, is used for fodder in Madeira. *C. purpureus*, the purple B., is a hardy plant, which when grafted with *Laburnum vulgare* has produced *C. Adami*. Species of *Genista*, while also included under the name of B., are more commonly called whin or furze, and are noted for their branches, which are reduced to thorns. *G. monosperma* is

a native of Spain which grows on the coast, has white flowers, and yields a useful fibre.

Broom-corn, or *Sorghum vulgare* and *S. saccharatum*, are species of Gramineæ, which grow in N. America. The fruit is eaten by cattle, and the tops of the grass are made into brooms.

Brooms, seaport of W. Australia on the N.W. coastline with 7000 inhab., of whom 4000 are Jap., Malays, Chinese, etc. The adjoining coast supplies more than three-fourths of the pearl-shell supply of the world. There is a fully equipped native hospital here. There is an air service to B. from Perth.

Broome, William (1689-1745), Eng. writer and translator, educated at Eton and Cambridge. Part-author of prose translation of the *Iliad* (1712). He condensed Eustathius' notes on Homer for Pope; collaborated with Pope and Fenton in translating the *Odyssey* (1722-26). He was considered to have done the greater part of the work, and a couplet was written:

'Pope came off clean with Homer, but they say
Broome went before and kindly swept the way.'

Actually he trans. eight of the twenty-four books and supplied nearly all the notes. B. considered his services in this underpaid, and quarrelled with Pope, who revenged himself by a lue in the *Dunciad*, which was later modified, and also in the *Bathos*. B. pub. sermons and poems, and trans. *Anacreon for the Gentleman's Magazine*. See Dr. Johnson, *Lives of the Poets*, 1779-81; W. Elwin and W. J. Courthope, *Pope's Works and Correspondence*, viii. 30-186, 1871-89.

Broom-rape, see OROBANCHE.

Brooms, tn. of France, in the dept. of Côtes-du-Nord. It was the bp. of Bertand du Guesclin. Dinan is 15 m. to the N.E. Pop. 2520.

Brosch, Moritz (1829-1907), Ger. historian, educated at Prague and Vienna; became a journalist; in 1873 he went to Venice and took up historical studies. Among his writings are *Julius II. und die Gründung des Kirchenstaats* (1878); *Der Kirchenstaat* (1880-82); *Lord Botolphsbroke und die Whigs und Tories seiner Zeit* (1883); *Oliver Cromwell und die Puritanische Revolution* (1886). B. continued Lappenberg and Paul's *Geschichte von England*, and wrote a chapter on 'The Height of the Ottoman Power' for the *Cambridge Modern History*, vol. iii. See Ward, *English Historical Review*, vol. xxii., 1907.

Brosus is a genus of Coleoptera in the family Carabide, or ground beetles. They are carnivorous, and are remarkable for the almost total absence of indented striæ on the elytra and for their large and strong mandibles. *B. cephalotes* is found under stones and rubbish on Eng. sea coasts.

Brosse (Gaelic *brothas*), Scottish dish. It is water-B. or beef-B. according as it is made with water or liquor from the meat. Milk can also be used, but what-

ever the fluid it is poured boiling hot on oatmeal, and the ingredients are mixed by instant stirring. 'Athole B.,' a Highland drink, is made of honey and whisky.

Broseley, par. now part of the municipal bor. of Wenlock, Shropshire.

Brosimum is a genus of Moraceæ which grows in tropical America. The inflorescence is curious, consisting of one female and many male flowers, and the fruit is an achene. *B. galeatodendron* is the cow-tree, or milk-tree, found in Guiana, which yields a milky latex. The fruit of *B. alicastrum* is bread-fruit.

Brosnius is a genus of fish of the codfish family, Gadidae. *B. brosme*, the torsk, is dried and barrelled in the Shetland Is.

Brosses, Charles de (1709-77), a versatile man of letters, was the first president of the parliament of Burgundy. In 1750 he pub. the first work on the ruins of Herculaneum. In his *Histoire des navigations aux terres australes* he was the first to define Australasia and Polynesia. Besides contributing to the *Encyclopédie*, and publishing an ingenious theory on the origin of language, he wrote some famous letters on Italy, and brought out, in 1777, a hist. of the seventh century of the Rom. republic.

Broth, liquid food prepared by decocting meat with bone and vegetables in water. The ingredients are mixed together in cold water and brought gradually to the boil; they are then allowed to simmer gently for some hours, after which the liquid is strained off. The 'food-value' of B. is not high, as the nourishing albumen and gelatin remain in the residue in an indigestible form; its usefulness lies in the fact that it is a stimulant and a relish. The B. itself contains creatin and some albuminous and gelatinous matter from the meat, and colouring and mucilaginous substances, a little albumen and volatile oils and salts from the vegetables.

Brotherhoods, associations of people having various things in common for social or religious purposes. During the Middle Ages a large number of religious B. sprang up—associations of men united in a common work, yet without the strict rule of a religious order. The guilds, in which the religious element was at first quite as important as the secular, were of the same nature. In the modern Rom. Church these B. and confraternities have largely increased in number, and many have sprung up in the Anglican Church. Freemasonry, another kind of brotherhood, was condemned by the Church for gnosticism in the Middle Ages; and is now on the Continent much affected by atheism and materialism.

Brothers, Lay, religious confraternity whose members are employed as servants in monasteries. Similarly, there are lay sisters. They are bound by monastic rules, but are not destined for holy orders. The earliest instance of L. B. occurred in the monastery of Vallombrosa, early in the eleventh century.

Brothers, Richard (1757-1824), Brit. naval officer. He was b. in Newfoundland and educated at Woolwich. His fame rests more upon his religious mania

than his marine achievements. He was discharged from the navy when a lieutenant, but returned to the sea after an unhappy marriage in 1783. His religious views could not be reconciled with his former calling, and he abandoned the sea once more. During his chequered career he became fired with the idea that he was divinely ordained 'the nephew of the Almighty.' He prophesied the death of the king and the end of monarchy, and was consequently confined as a criminal lunatic. Later removal to a private asylum gave him an opportunity to produce many pamphlets resulting in the support of a few zealots. He foretold the violent death of Louis XVI. which was corroborated in fact. He was one of the founders of the belief that the Eng. people represent the ten lost tribes of Israel.

Brothers, The, are three isolated mts., invaluable as landmarks, quite close to the coast of New S. Wales, between Port Macquarie northwards and Harrington Inlet to the S.

Brotton, par. with railway station, 2 m. S.E. of Saltburn, in Skelton and Brotton urb. dist., N. Riding, Yorkshire, pop. 4500; eccles. dist. 7500.

Brotula is a genus of marine fish which is a type of the family Ophidiidae. It is distinguished chiefly by the dorsal and anal fins being united with the dorsal. *B. barbatus* comes from the Antilles.

Brouage, vil. of the Charente-Inférieure dept. of France. 13p. of Samuel de Champlain. Pop. 250.

Brough, markt. tn. of E. Westmorland. A great fair is held annually 2 m. away. Pop. 600.

Brough, Lionel (1836-1909), Eng. actor, b. in Monmouthshire, son of a dramatic author. B. was errand-boy in editorial offices of the *Illustrated London News* when about 12. First appearance on stage in Dec. 1854; 6 months later withdrew from stage to become assistant publisher of the *Daily Telegraph*. Returned to stage in 1858, but soon after took a position on the *Morning Star*. Gave monologue entertainments at the Regent Street Polytechnic, 1862-63; became a professional actor in earnest in 1864. Tony Lumpkin was one of his most noted characters. Among his Shakespeare parts were Sir Toby Belch, Touchstone, the Host of the 'Garter' in *The Merry Wives*. Other roles of his were Bumble in *Oliver Twist*, Brisevouche in *A Scrap of Paper*. He appeared in Terry's *Sweet Nell of Old Drury* (1901), and in *Into the Light at the Court* (1908).

Brougham, Henry Peter, Baron Brougham and Vaux (1778-1868), Lord Chancellor of England, was b. in Edinburgh on Sept. 19. He was educated at the Edinburgh High School, which he entered in 1785 and left in 1791, being then the head of the school. He entered Edinburgh Univ. in 1792, studying Gk. under Prof. Dalzell and the natural sciences under Prof. Playfair, especially applying himself to mathematics. It was characteristic of him that he soon familiarised himself with Newton's *Principia*, mastered the fluxional calculus in 1794,

and, in 1795, the year in which he left the univ., submitted a paper to the Royal Society on some new phenomena of light and colours, which was pub. in the *Transactions* of the society. Yet despite his leaning to physical science B.'s mind was neither an accurate nor an exact one, and his pursuit of natural sciences was chiefly a recreation. Both by study and by practice, oratory was his chief art, and throughout life he continued to cultivate it with histrionic ardour, yet ever feeling that his own ideal was never attained. He early became known as a scientist, and was elected a fellow of the Royal Society. He was admitted to the Faculty of Advocates in 1800, but saw no hope of future preferment in a career at the Scottish Bar, and so in 1803 he came to London, entered at Lincoln's Inn, and in 1808 was called to the Eng. Bar. In 1802 the famous *Edinburgh Review* had been founded, and B. became one of its first and most capable contributors, so much so that by the time he arrived in London he was a man of considerable mark. He speedily became known amongst the Whig politicians, and was employed on a diplomatic mission to Portugal during 1806. He produced also a great number of political pamphlets during 1807, and was of great help to the Whigs during that period. But his hopes of a seat in the Commons were still unfulfilled, and in 1808, after being called to the Eng. Bar, he joined the N. circuit. Campbell, in his *Lives of the Chancellors*, points out that he did not make his name in legal circles until after he had become actively a politician. About this time he became an ardent supporter of the movement for the abolition of slavery, a movement with which his name will ever be closely associated. In 1810 he became a member of Parliament. In a very short time he had won for himself a considerable reputation as a speaker and politician, and was regarded on all hands as the future leader of his party. From 1812 to 1816 he was out of Parliament, having been defeated at Liverpool, but it was during these years that B. became the adviser of the Princess of Wales. He was urgent in his advice to her not to leave England, and he opposed equally vehemently her return to England after the death of George III. In 1816 he had again entered Parliament and did some useful work, especially on the committee which inquired into the state of education amongst the poor of London. But in 1820 he was appointed attorney-general for the queen, and conducted her defence when the ministers introduced a Bill for her deposition and for the dissolution of her marriage to George IV. He defended her ably, and the Bill was not taken any further by the ministers. His conduct of this case raised him high in his profession, and he shared in the triumph of the queen and the people over the court and the ministers. His reputation as a lawyer was now securely founded, and he was soon enjoying an immense practice on the N. circuit. In 1830 he was returned to Parliament as the member for York. The Gov. under the duke of Wellington, defeated shortly

afterwards, resigned, and Earl Grey was sent for by William IV. So high was B.'s reputation that it was impossible to leave him out of the Gov., and in 1830 he was created Baron B. and Vaux, and given the Great Seal. The passing of the Reform Act was in a great measure due to the skill with which he defended the Bill, but with the passing of that Bill the authority of B. began to decline. His manner had been rapidly becoming dictatorial, he regarded himself as indispensable, and he probably used the *Edinburgh Review* to increase his influence and for self-glorification. In 1834 Grey resigned, and B. remained for a time with Melbourne. But his conduct was rapidly becoming too indiscreet, and his betrayal of the confidence of Melbourne on the dismissal of the ministers was the finishing act of his official career. The formation of the second Melbourne ministry in 1835 did not lead to his reappointment as chancellor, the seal being put in commission; but B. never forgave the Whigs for that, and during the rest of his career he spoke as an independent member. He was insatiable in the number of Bills which he introduced and in the number of speeches which he made. But his vanity received its severest blow when, in 1836, the Great Seal was given to Lord Cottenham. His career during the thirty years which he was yet to live is the record of one long attack upon the holders of those principles which he himself never repudiated. During this period he did some good work on the judicial side of the House of Lords, but his reputation would have been clearer and higher had he died considerably earlier. In 1860 he received a second patent of peerage with remainder to his younger brother William, the patent setting forth that the peerage was given in recognition of his services to the cause of education, and in the movement for the abolition of slavery. His last days were spent at Cannes, where he d. on May 7. In addition to his reputation as a voluble speaker, he was also known by the amount of his writing and correspondence. B. was one of the founders of London Univ., and also of the Society for the Diffusion of Useful Knowledge.

Broughton, Baron, see HOBHOUSE.

Broughton-in-Furness, par. and markt. tn. with railway station 9 m. S.W. of Coniston, pop. 1136. Here is Broughton Tower with a superb view.

Broughton, Rhoda (1840-1920), novelist, b. at Segwryd Hall, near Denbigh, N. Wales, the daughter of the Rev. Delves Broughton. She came into prominence as a novelist of the popular type while still in her twenties, and continued to produce works of fiction for many years. Among her best-known novels are *Come up as a Flower* (1867); *Not Wisely but Too Well* (1867); *Red as a Rose is She* (1870); *Joan* (1876); *Belinda* (1883); *Dear Faustina* (1897); *Lavinia* (1902); *Concerning a Fox* (1914), and *A Fool in her Folly* (1920).

Broughty Ferry, a watering-place of Forfarshire, on the firth of Tay, 3½ m. E. of Dundee. Fishing is almost the only industry, but the tn. is largely used as a place of residence by business men of

Dundee. The castle, at the E. end of the tn., was repaired about the year 1860, and converted into a defence for the Tay. Pop. 5000.

Broussa, see BRUSA.

Broussais, François Joseph Victor (1772-1838), the son of a physician, was b. at St. Malo. After taking a medical degree in Paris, he served as an army surgeon, and in 1814 was appointed assistant prof. at the military hospital of Val-de-Grâce. About this time he introduced a theory of medicine, which asserted that life was sustained only by excitation or irritation, and that all diseases were at first local, but were made general by the 'sympathy' of the other organs. His views were explained in his *Examen de la doctrine médicale généralement adoptée* (1816); they met with considerable acceptance, although at first hotly contested by the medical profession in Paris. B. became prof. of general pathology at the Academy of Medicine in Paris in 1830, and d. at Vitry-sur-Seine.

Broussonetia is a delicious tree of the order Moraceae. From the inner bark of *B. papyrifera*, or paper mulberry, the Chinese and Jap. manuf. paper, and the S. Sea Islanders the prin. part of their clothing.

Brouwer, Adrian, see BRAUWER.

Brower, Jacob Vradenberg (1844-1905), Amer. explorer and archaeologist, b. at York, Michigan. He served during the Civil War in both cavalry and navy, and was a member of the Minnesota legislature, 1867-73. B. discovered many prehistoric mounds at Mille Lac and other places in Minnesota. Among his works are *The Mississippi River and its Source* (1893); *Prehistoric Man at the Head Waters of the Mississippi* (1895); *The Missouri River and its Utmost Source* (1896); *Quirira* (1898); *Harakeh, Mille Lac* (1899), and *Kansas. Monumental Perpetuation of its Earliest History, 1541-1896* (1902).

Brown, Mount, a peak in the Rocky Mts., on the frontiers of Brit. Columbia, and near the source of the Columbia R. Height 9035 ft.

Brown, Alice, b. Hampton Falls, New Hampshire, U.S.A., Dec. 3, 1857. A prominent figure in Amer. literature over many years, belonging rather to the old school of New England writers who took New England life for their themes. Among her books are *Meadow Grass* (1895), *Tiverton Tales* (1899), *The Story of Thirza* (1909), *Homespun and Gold* (1920). Her play *Children of Earth* (1915) won the ten-thousand-dollar prize offered by Winthrop Ames, an Amer. theatrical producer.

Brown, Charles Brockden (1771-1810), an Amer. novelist. His parents were Quakers of Philadelphia, where he was b. His delicate constitution favoured a retiring disposition and a propensity for study. He early showed a propensity for the arranging of elaborate architectural designs, a trait afterwards evident in his careful construction of utopias and similar perfect commonwealths. His works are extremely terse in style and weird in conception, and include *Wieland* (1798); *Arthur Mervyn* (1798); *Ormond* (1799);

and *Edgar Huntley* (1801). *D. of consumption.*

Brown, Ford Madox (1821-93), Eng. painter. His father was a retired navy purser, who at this time lived at Calais, where Ford Madox B. was b. His grandfather was the founder of the Brunonian theory of medicine. At a very early age he showed an especial aptitude for drawing and painting, and he was sent at the age of fourteen to receive tuition at Bruges. His prin. instructor, however, was Baron Wappers, at Antwerp, who was at this time regarded as the head of the Belgian school. He first exhibited in 1837, and three years later exhibited in England at the Royal Academy, the picture being 'The Giaour's Confession.' In the same year he completed his 'Execution of Mary Queen of Scots.' In 1843 he took part in the cartoon competition for the mural decoration of the Houses of Parliament, and his pictures received very high praise but no prize. Having on the death of his parents been left with a fair competence, he spent the next few years travelling. He married twice: first, in 1841, Elizabeth Bromley, and secondly, on the decease of his first wife in 1846, Emma Hill. He left three children, Lucy, who married W. M. Rossetti in 1874; Catherine, who married Dr. Hueffer; and Oliver, himself an artist, who d. in his twentieth year (1874). Amongst his chief pictures are 'Manfred on the Jungfrau,' 'Chaucer at the Court of Edward III.,' 'Cordelia and Lear,' 'Cromwell, Protector of the Vaudois,' 'Christ washing Peter's Feet,' 'Work,' 'Romeo and Juliet,' and 'The Last of England.' His style had much in common with the pre-Raphaelite school, but came rather before that movement had reached its summit. See his *Pre-Raphaelite Diaries and Letters*, ed. by W. M. Rossetti, 1900.

Brown, Francis (1840-1916), Amer. Semitic scholar; b. at Hanover, New Hampshire, son of Samuel Gilman Brown. He graduated at Dartmouth College, Hanover, 1870, and at Union Theological Seminary, New York, 1877; and after studying in Germany, 1877-79, he returned to the seminary, of which he became president in 1908. Director of Amer. School of Study and Research in Palestine, 1907-8. In 1911 he was tried for heresy before the Presbyterian General Board, and acquitted. His chief work was the editing of the *Oxford Hebrew Dictionary*. His other works which are nearly all linguistic, include *Assyriology: its Use and Abuse in Old Testament Study*, 1885.

Brown, George (1818-80), Canadian politician, b. in Edinburgh, and educated there; removed to New York in 1838, and was engaged in journalism. In 1843 he went to Toronto and founded there in 1844 the *Toronto Globe*, still the leading Liberal Canadian paper. In 1852 he entered the Canadian parliament, and in 1858 led a coalition gov. for a brief space of time. During 1864-65 he led the Reform section of the Coalition Gov., resigning on account of a difference of opinion regarding a reciprocity treaty

with the U.S.A. In 1864 he was delegate to conferences at Charlottetown and Quebec, and in 1865 went on a mission to London. In 1873 he became a dominion senator, and in 1874 was joint Canadian plenipotentiary with Sir Edward Thornton at Washington. He was shot by a discharged employee in 1880.

Brown, George Douglas (1869-1902), Scottish novelist, b. in Ayrshire. He graduated at Oxford, 1895, and then started on his literary career in London. He pub. *Love and a Sword* (1899), and his *House with the Green Shutters*, written under the pseudonym of George Douglas, attracted much notice (1901). It represents some of the harder aspects of Scottish life, and is useful to contrast with the works of Barrie and Ian MacLaren. See E. Muir, *Latitudes*, 1924.

Brown, Henry Kirke (1814-86), Amer. sculptor, was b. at Leyden, Massachusetts. After studying in Europe, he returned to his native country in 1846, and executed some notable works, including an equestrian statue of Washington in New York, and one of Gen. Scott in Washington.

Brown, Horatio Robert Forbes (1854-1926), Eng. historian of Venice, and biographer of J. A. Symonds, was b. at Nice; son of Hugh Horatio B., of Edinburgh and Peebles. He was educated at Clifton College and at New College, Oxford. In 1878 he visited Venice, and began studying its life and hist. His numerous contributions to Venetian literature include: *Life on the Lagoons* (1884); *Venice* (1893); *In and around Venice* (1905); *Studies in the History of Venice* (1907); *Calendar of State Papers* (covering the period 1581-1613), compiled 1894-1905 (Venice); and a translation of Molmenti's *Storia di Venezia*. He pub. a vol. of poetry called *Drift*, in 1900. His life of John Addington Symonds, pub. 1895, was supplemented in 1923 by *Letters and Papers*. He had retired to Edinburgh early in the First World War; but he returned to Italy at the peace. He d. at Belluno.

Brown, Dr. John, known as 'Estimate Brown' (1715-60), writer; made, according to J. S. Mill, a clever defence of utilitarian philosophy in his *Essay on the Characteristics of Shaftesbury* (1751). His *Estimate of the Manners and Principles of the Times* (1757), which was a vehement satire on luxury and the like, was exceedingly popular, whilst his *Barbarossa* (1754) was played with success by Garrick. An attack of melancholy, coupled with a hereditary tendency to insanity, accounts for his suicide.

Brown, John (1722-87), of Haddington, the son of a poor weaver, was b. at Carpow, near Abernethy, Perthshire. He lost both father and mother at an early age. He studied Gk., Lat., and Heb. while working as a herd-boy. He served with the gov. forces in the '45, was a schoolmaster from 1747 to 1750, and became a pastor at Haddington in 1751. Refusing a call to New York in 1784, he continued to live at Haddington on a stipend of £40 or £50 a year until his death. In 1768 he was appointed prof.

of theology to the Associate Burgher Synod. His works included *A Dictionary of the Holy Bible*, 1769, and *The Self-Interpreting Bible*, 1778.

Brown, John (1735-88), was the founder of the Brunonian system of medicine. Being a lad of promise, he was admitted free to the lectures at Edinburgh Univ. In 1780 he pub. his *Elementa Medicinæ*, in which he explained a new system of treatment. Written in Lat.—he was famous as a Lat. scholar—this book gained him a world-wide reputation. His sound doctrine, that morbid action was the result of weakness, and therefore called for stimulating treatment, is now universally accepted.

Brown, John (1784-1858), the son of John B. of Whitburn (1754-1832), and the grandson of John B. of Haddington. He studied at Edinburgh Univ. and the Burgher Theological Hall, Selkirk. He held successively the pastorates of Rose Street Church, Edinburgh (1822-29), and Broughton Place, Edinburgh. In 1830, Jefferson College, Pennsylvania, conferred upon him the degree of D.D., and in 1834 he was elected prof. of exegetical theology. He was engaged in many controversies, notably in the Atonement controversy of 1840-45. In 1845 he was tried for his views before the synod, but was honourably acquitted. He was a voluminous writer on religious subjects.

Brown John (1800-59), one of the most famous of Amer. abolitionists, was b. at Torrington, Connecticut, U.S.A., May 9, of Amer. colonial and revolutionary ancestors. He was said to have been descended from a pilgrim on the *Mayflower*, and certainly displayed a stern religious spirit which bordered on fanaticism. He studied for a time for the 'congregationalist ministry, but discontinued at the age of eighteen, and then led a wandering life, being at times a land surveyor and a sheep raiser, but was more or less a failure. He then tried farming in sev. of the E. states, and finally settled in Kansas in 1855, whither five of his sons had preceded him. A great struggle was then going on in the U.S.A., for as the middle and far W. were being opened up by settlers, the S. slaveholders were trying to secure them as ters, where slavery was allowed. The abolitionists on the other hand tried to make them 'free soil,' that is, localities where slavery was not permitted. Kansas was a battle-ground between the two hostile forces. B. soon took an active part in this contest, and was one of the leaders in the Pottawatomie massacre, in which a number of pro-slavery farmers were killed. This made B.'s name known all over the U.S.A., and it became anathema to the S. Meanwhile, B. was planning to have a place in the Virginia mts. where escaped slaves could find a refuge and defend themselves against their pursuers. To this end he settled on a farm near Harper's Ferry, in which tn. there was located a gov. arsenal. To procure sufficient arms for his slaves' harbour of refuge, on Oct. 16, 1859, with thirteen white men and five Negroes, he seized the arsenal and held a

number of leading citizens of the tn. as hostages. Gov. troops were quickly sent there, and by the irony of fate they were under command of Col. Robert E. Lee, who in the civil war shortly to follow became commander-in-chief of the Confederate armies. B. was captured, but only after he had been badly wounded and two of his sons killed. This was on Oct. 18. He was put upon his trial and convicted of treason, murder in the first degree, and criminal conspiracy with slaves and was hanged at Charlestown Dec. 2, 1859. The verdict and execution were strictly legal, but they made of B. a hero in the N. He became a martyr, a latter-day saint, a legend. Only a few years later and N. troops were going into battle or marching through a beaten S., singing a song which immortalised B.'s name:

'John Brown's body lies a-moulder-
ing in the grave,
But his soul goes marching on!'

Brown, John (1810-82), son of Dr. John B. (1784-1858), was b. at Biggar, Lanark. He was educated at home and afterwards at Edinburgh. At Edinburgh Univ. he studied under the eminent surgeon, Syme, to whose qualities his pen paid an affectionate tribute in later years. Conscientious and painstaking as a medical man, he was, at heart, more devoted to literature than to medicine, though always diffident of his literary powers. He wrote little, but wrote that little extremely well. His chief publications were the collection of essays known as *Horæ Subsecivæ* (1858-82), and *John Leech* (1877). In the latter he tells us that it was he who originated the first national exhibition of roses in London. He is chiefly remembered for his charming, quaintly written essays, among which *Rab and his Friends* (1859) and *Marijorie Fleming* (1863) are perhaps the best known. He spent all his life in Edinburgh, where he died.

Brown, Sir John (1816-96), Brit. steel and armour-plate manufacturer, b. in Sheffield of a slater. At fourteen he became an apprentice in a file and table cutlery manufactory, of which he ultimately became the manager. He invented the conical steel buffer for railway wagons, was the first to make steel rails, carried on and improved the Bessemer process, and invented a method of rolling armour-plate. Hammered armour-plate had been used hitherto, but B.'s method was so successful that he received orders from the Admiralty for armour-plate for about three-fourths of the ships of the navy. In 1856 he started the huge Atlas Works for the manuf. of armour-plate, railway buffers, ordnance forgings, railway carriage axles and tyres and steel rails. B. received a knighthood in 1867, and was much honoured in his native tn., of which he was twice mayor and master-cutler.

Brown, John (c. 1825-83), Queen Victoria's personal servant, was b. at Crathie, Aberdeenshire, second of the nine sons of a small farmer, tenant on the estate of Col. Farquharson, in whose service he

began life. In 1849 he became gillie to Albert the prince consort; in 1851 he began to lead the queen's pony when she went riding; and in 1858 he entered her service at Balmoral. For the last nineteen years of his life he was her personal attendant. It was he who seized Arthur O'Connor when he pointed a pistol (unloaded) at her when she was entering Buckingham Palace, Feb. 23, 1872; and for this act he was the first to receive a gold medal for long and faithful domestic service. The queen credited him with 'all the independence and elevated feelings peculiar to the Highland race.' He d. of a brief illness following erysipelas, in the Clarence Tower of Windsor Castle, March 27, 1883.

Brown, Lancelot, known as 'Capability Brown' (1715-83), landscape gardener and architect, b. at Kirkcubbin, Northumberland, acquired the art of landscape gardening early in his life. He laid out the grounds at Kew and Blenheim. His architectural career began with a house and church at Croome for the earl of Coventry. He was high sheriff of Huntingdonshire in 1770.

Brown, Peter Hume (1849-1918), Scottish historian; b. at Tranent, E. Lothian. Educated at Free Church School, Prestonpans, becoming a pupil teacher. Taught at schools in Wales and Newcastle-on-Tyne, and opened a school at Edinburgh in 1875. In 1901 was appointed Fraser prof. of ant. Scottish hist. and palaeography at Edinburgh Univ.—he was already editor of the *Privy Council Register of Scotland*—and was appointed historiographer royal for Scotland in 1908. He issued a number of vols. for use in schools. His other works include: *George Buchanan and his Times* (1890); *Early Travellers in Scotland* (1891); *Scotland before 1700, from Contemporary Documents* (1893); *John Knox, a Biography* (1895); *Scotland in the Time of Queen Mary* (1904); *The Union of 1707, a Survey of Events* (1907); *History of Scotland* (three vols., the last appearing in 1909); and *Life of Goethe* (pub. posthumously) (1920).

Brown, Robert (1773-1858), famous Brit. botanist, b. at Montrose, and a schoolfellow of Joseph Hume and James Mill. He entered first the Marischal College, Aberdeen, and afterwards removed to Edinburgh Univ. His ability and his application attracted the attention of his prof. In 1795 he obtained a commission and served in the N. of Ireland. He became a protégé of Sir Joseph Banks, who gave him the post of naturalist in an expedition which was setting out to explore the coast of Australia. The expedition returned in 1805 to England with a rare collection of specimens numbering about 4000. In 1810 he pub. his greatest work, *Prodromus Floræ Norvæ Hollandiæ et Insulæ Van Diemen*. In the same year he became private secretary to Sir Joseph Banks. The library and collection of Sir Joseph Banks were, on his death in 1820, bequeathed to B. for life. In 1827 he made them over to the Brit. Museum and became keeper of its botanical dept. He held this position until his

death in 1858. His fame as a botanist was international. He was a fellow of the Royal Society, an associate of the Institute of France, and received the order *pour la mérite* from Prussia.

Brown-shirts, see S.A.

Brown, Thomas (1663-1704), Eng. satirical writer, b. at Shifnal in Shropshire, referred to by Addison as of 'facetious memory.' He studied at Christ Church, Oxford, where he is said to have escaped expulsion by extemporising the famous verse:

I do not love thee, Doctor Fell,
The reason why I cannot tell;
But this I know, and know full well,
I do not love thee, Doctor Fell;

Dr. Fell, dean of the college, having set B. the task of extemporising a trans. of Martial's epigram, *Non amo te, Sabidi, nec possum dicere quare; Hoc tantum possum dicere, non amo te*. B. was for a time a schoolmaster near London, in which city he afterwards lived by his pen. His writings are numerous and miscellaneous, and, while witty, are coarse and frequently vulgarly abusive.

Brown, Thomas (1778-1820), distinguished Scottish metaphysician, b. at Kilmarnock, and educated at the univ. of Edinburgh, where he attended the lectures of Dugald Stewart, prof. of moral philosophy. He abandoned his arts course for medicine, becoming doctor of medicine about 1803, and in 1806 a partner with Dr. James Gregory. Resigning his practice in 1810 in order to assist Dugald Stewart, he became a popular lecturer, holding the position until his death. He wrote many poems of no outstanding merit, but his philosophical works show great merit and power of analysis, although now little known. His publications include: *Observations on Darwin's Zoonomia* (1798); *An Inquiry into the Relation of Cause and Effect* (1804); and *Lectures on the Philosophy of the Human Mind* (1820).

Brown, Thomas Alexander, see BOLDREWOOD, ROLE.

Brown, Thomas Edward (1830-97), poet, schoolmaster, and divine. He was b. at Douglas in the Isle of Man. His father held the living of St. Matthew's. He was educated at King William's College, and at Oriel College, Oxford. Here he obtained a double first, and was rewarded with a fellowship. After a short period as a headmaster at Gloucester, he accepted the headmaster of Clifton's (Dr. Percival) offer of the position of master for the modern side. He pub. a number of poems and collections of poems, the chief of them being in the Manx dialect, amongst which may be mentioned, *Fo'c's'le Yarns* (1881); *The Doctor and other Poems* (1887); *The Manx Witch* (1889); and *Old John* (1893). His collected poems were pub. in 1900.

Brown, Sir William (1784-1864), banker and merchant, was b. at Ballymena, Ireland, his father being a linen merchant. He was taken at an early age to America, but returned from there in 1809 and settled down in Liverpool. Here he estab. a business, first as a linen merchant, later

as an importer of raw cotton, and finally as a banker. His trade increased very rapidly, and so successful was he that the Bank of England helped him to tide over the financial crisis of 1837, since the interests affected by his firm were so varied. In 1844 he is said to have possessed at least one-sixth of the whole trade between America and England. He was Liberal M.P. for St. Lancashire 1846-1859. In 1863 he was made a baronet. He was a generous donor to the city of Liverpool, presenting that town with a public library and museum.

Brown Bess, the name (obsolete since the introduction of the rifle) given by the infantry of the Brit. Army to the flint-lock musket used by them in the eighteenth and early nineteenth centuries.

Brown Spar, a variety of dolomite containing carbonate of iron. Its colour inclines to red or brown. The term is sometimes applied to examples of ankerite, siderite, and bruennelite.

Brown University, founded by the Amer. Baptists on a non-sectarian basis at Providence, Rhode Is., U.S.A., in 1764. It was first named Rhode Is. College, but in 1804 this was changed to B. U. in honour of its benefactor, James Brown. A separate women's college was added in 1897.

Brown Willy, the highest point—1375 ft.—in Cornwall, England. It is 10 m. N.E. of Bodmin.

Browne, Charles Farrar (1834-67), celebrated Amer. humorist and writer who adopted as his pen name Artemus Ward. He was b. at Waterford, Maine, and began life as a compositor, later becoming a reporter and a contributor to the newspapers. In 1858 he pub. the first of the Artemus Ward series in the *Cleveland Plain Dealer*, and this series of articles received a fair amount of attention and popularity both in America and in England. The satire which underlay the atrocious spelling and the grave moralising attracted universal attention, and he was invited to become a contributor and the editor of a new paper, *Family Fair*, which commenced publication in 1859. The paper failed, and Artemus Ward became a travelling lecturer, meeting in the course of his lectures with adventures more or less varied amongst the Mormons and Indians of America. His reputation as a lecturer was speedily assured, and Ward travelled over the greater part of the Amer. states lecturing on a variety of topics and accompanied by a panorama. In 1864, owing to a severe illness, he was for a short time unable to carry out his programme of lectures, but on his recovery he resumed his lectures and in 1866 crossed over to England, where he speedily made himself known both for the variety and humour of his lectures and also for his contributions to *Punch*. In 1867 his health again broke down, and in the March of that year he d. at Southampton. His complete works were pub. in the same year in London. Amongst his chief works may be noticed, *Artemus Ward, his Book* (1862); *Artemus Ward amongst the Mormons* (1866); *Artemus Ward in London* (1867).

Browne, Edward Granville (1862-1926), Eng. orientalist, son of Sir Benjamin C. B., shipbuilder, of Newcastle-on-Tyne. Educated at Eton and Cambridge. Studied medicine at Cambridge and in London, but devoted himself chiefly to the study of Persian. Travelled in Persia, 1887-88. Pubs. include trans. from Persian—also *A Year amongst the Persians* (1893 and 1926) (including a memoir in the 1926 ed.); and a *Literary History of Persia*, in four sections (1902-24).

Browne, Edward Harold (1811-91), Eng. bishop. He was b. at Aylesbury, and educated at Eton and Cambridge. He was a fellow and tutor of Emmanuel College. In 1843 he became vice-prin. of Lampeter College, and was later appointed Norrisian prof. of divinity at Cambridge. In 1850-53 appeared his famous book, the *Exposition of the Thirtynine Articles*, a book which was for a long time the standard work on this subject and which ran into many eds. He became bishop of Ely in 1864, and was one of the most prominent churchmen of the time. In 1873 he was translated to Winchester, which see he resigned owing to ill health in 1890.

Browne, George, Count de (1698-1792), soldier of fortune, b. at Camas, Limerick, in Ireland. On completing his studies at Limerick, he entered (1725) the service of the elector palatine, since, as a Catholic, he was excluded from many appointments in his own country. From Germany he passed into the Russian army, where he quickly distinguished himself. After successfully quelling a revolt against the Empress Anne, he took an active part in the wars against Poland, France, and Turkey. His whole life was full of adventure: he was taken prisoner by the Turks, and sev. times sold as a slave. Later he fought in the Seven Years war, and was wounded at Zorndorf. He was made major-general and then field-marshal by Peter III. For the last thirty years of his life he was governor of Livonia and Esthonia, from which position Catherine II. released him only on account of extreme old age.

Browne, Hablot Knight (1815-82), Eng. artist, best known by pseudonym 'Phiz.' He was b. of poor parentage at Lambeth. He received what artistic training he had during his apprenticeship to Pinden, the steel engraver. He was artist for the illustrations of Dickens's *Pickwick* when it was first issued, and always signed his drawings as Phiz. He was the creator of the Sam Weller which all readers of Dickens know, and amongst other very successful creations of his may be mentioned Mrs. Gamp, Tom Pinch, Major Bagstock, Micawber, and David Copperfield. He executed some drawings for *Punch*, and did most of the illustrations for Lever's works and also some for Harrison Ainsworth. In 1867 he suffered from slight paralysis, after which he did no more really successful work. In 1878 he was awarded a pension by the Royal Academy. See F. G. Kitton, *Phiz*, 1882.

Browne, Maximilian Ulysses (1795-57), the descendant of an Irish Jacobite family.

He was *b.* at Basle on Oct. 23. His father and uncle were two of the exiles of 1690, his father entering the Austrian service and becoming ennobled, whilst his uncle entered the Russian service and became a field-marshal. He himself entered the service of Austria at a very early age, and was rapidly advanced. He took part in the It. campaigns of the Austrian army and distinguished himself also whilst fighting against the Turks. He was early in the field during the war of the Austrian Succession (1740-48), and it was owing to his efforts in the field that the success of Frederick the Great was restrained. At the end of the war he was promoted to the rank of commander-in-chief of the army of Bohemia, and in 1753 he became a field-marshal. He was still an active officer when the Seven Years war (1756-1763) broke out, and he took an active part in the early campaigns. He commanded the Austrians at the battle of Lobositz (1756), where he was defeated, but retreated in good order. He was mortally wounded at the battle of Prague, and *d.* on June 26.

Browne, Robert (c. 1550-1633), founder of the Brownists. He was *b.* at Tolethorpe, near Stamford, and was descended from an anct. and well-known family. He received a good education at Corpus Christi College, Cambridge, and was for some time a schoolmaster. He, however, took orders, and remained for a time in the Church, but his licence to preach was revoked when he began to attack and condemn the discipline of the Estab. Church. So fiercely did he denounce the gov. of the Church that he was imprisoned in 1581 by order of the bishop of Norwich, and only released because of the influence which he could bring to bear. After sev. imprisonments he retired to Holland, and here he formed a church. The church was not, however, very successful and soon broke up. He had, in the meantime, issued a number of works, in one of which, *A Booke which sheweth the Life and Manners of all True Christians*, he put forward the theory on which modern Congregationalism has been built up. After living for some time at Middelburg, he returned to Great Britain and remained for some time in Scotland. He then returned to his own neighbourhood, and tried to extend his doctrines there. He again suffered imprisonment, but his attitude towards the Estab. Church changed, and he accepted a position as a schoolmaster at St. Olave's Grammar School. Finally he accepted ordination at the hands of the Estab. Church and became vicar of a church in Northamptonshire. Here he remained for forty-two years, but he had always been a man of violent temper, and he was in 1630 thrown into jail for an assault on a constable, where he *d.* His defection from the sect which by his writings and early precept he had estab. did not break up that sect. They remained in existence in Holland for some very considerable time, and numbers of them migrated to America. In England the sect took the name of Independents or Congregationalists.

Browne, Sir Thomas (1605-82), Eng. author and physician, *b.* in London, son of a merchant; educated at Winchester and Pembroke College (then known as Broad-gates Hall), Oxford, after which he studied medicine at continental univs., including Leyden, where he graduated. After prolonged travel abroad, he finally, in 1634, settled in practice at Norwich. His claim to renown rests on his *Religio Medici* (written, according to authentic tradition, at Shipden Hall, Halifax, an old house and park since somewhat rudely encroached upon by industry), pub. (though not designed for publication) in 1642 (but probably written in 1634 or 1635), though his *Hydriaphia, or Urine Burtall* (pub. 1658) probably displays best the peculiar force of his genius and the old-world flavour of his majestic style. His other chief work, *Inquiries into Vulgar Errors* (more fully *Pseudodoxia Epidemica, or Enquiries into very many commonly received Tenets and commonly presumed Truths, which examined prove but Vulgar and Common Errors*), was pub. in 1646. He is, indeed, one of the most original of Eng. writers. Whilst civil war devastated the country, he was serenely absorbed in metaphysical speculation on the mysteries of life. His work is steeped in the mysticism of Plato, so that he beholds the world merely as an image, and he seems to look on all things rather in the spirit of the modern transcendentalist. Introspective and sceptical though he was, his 'religion of a doctor' is thoroughly impregnated with the feeling of the essential mystery underlying true religion. His other writings are *The Garden of Cyrus, or the Quincuncial, Lozenge, or Network Plantations of the Ancients, Artificially, Naturally, and Mystically Considered* (1658), and *Certain Miscellany Tracts* (mostly addressed to Sir Nicholas Bacon) (1683). Knighted in 1671 on account of his royalist sympathies in the Civil war. He married in 1641, and the mild scorn expressed in the *Religio Medici* for 'that trivial and vulgar way of union' does not appear to have prevented him and his wife Dorothy from enjoying an exceedingly happy married life. He *d.* at Norwich. Works: folio ed., 1686. Complete works: The best ed. of the complete works is that by Simon Wilkin, 4 vols., 1836-3 vols. (Bohn), 1851, where full biographical and bibliographical information will be found. Prefixed to it is Johnson's famous *Life* (originally prefixed to the *Antiquities of Norwich*) and a supplementary memoir by the editor. Works in six vols., ed. by Geoffrey Keynes, 1928-31. Mention may be made of Dr. Greenhill's ed. of *Religio Medici* (1881). See Sir R. Gosse's *Life*, 1905, and R. Sencourt's study of B.'s philosophy, *Outlying Philosophy*, 1925.

Browne, William (c. 1591-1643), Eng. poet, descendant of a good family, *b.* at Tavistock, Devon; educated at the grammar school there and at Exeter College, Oxford, where he became tutor to Robert Dormer, afterwards earl of Carnarvon. After receiving in 1642 the honorary degree of M.A., he was received

into the family of William, earl of Pembroke, and so bettered his fortunes as to be able to purchase an estate; but nothing seems to be known of his subsequent life and most if not all of his literary work was done in his youth, the first part of *Britannia's Pastorals* having been pub. in 1613, *The Shepherd's Pipe* in 1614, and the second part of the *Pastorals* in 1616. There is also *The Inner Temple Masque*—he had been admitted to that inn in 1611—represented in Jan. 1614–15 and first pub. in the 1772 ed. of his works. The miscellaneous poems include the well-known epitaph on the countess of Pembroke ('Underneath this sable hearse,' etc.) long attributed to Ben Jonson. There are three eds. of his works: *Works*, ed. by W. Thompson and T. Davies (1772); *Whole Works*, ed. by W. C. Hazlitt (1868–1869); and *Poetical Works*, ed. by G. Goodwin (Muses' Library, 1894).

Browne, William George (1768–1813), traveller, was fired to explore by reading Bruce's *Travels*. In 1792, after careful examination, he concluded that the ruins at Siwah were not those of the temple of Jupiter Ammon. Though later he journeyed through Syria, Asia Minor, and the Levant, his most important expedition (1793–96) was to Darfur, when he acquired trustworthy information as to the Nile's course. He was murdered by bandits, it is said, whilst travelling towards Teheran. A dry, affected style spoils his *Travels in Africa, Egypt, and Syria* (1799).

Brownell, William Crary (1851–1928), Amer. critic. He was educated at Amherst College and for two years (1879–81) was art critic to the *New York Nation*. From 1890 onwards he acted as literary adviser to the publishing house of Charles Scribner. His first book, a sympathetic study of France, called *French Traits*, appeared in 1889, but with the publication of *French Art* in 1892 he firmly established his position in the profession of criticism. He wrote a series of incisive studies of the Victorian and Amer. 'prose masters,' which appeared in 1901 and 1909 respectively. Other books are *Newport* (1896); *Criticism* (1914); *Standards* (1917); *The Genius of Style* (1924); and *Democratic Distinction in America* (1927).

Brownhills, in Staffordshire, an urb. dist. in the Lichfield parl. div.; important coal-mines; near the Essington Canal and on the Rom. Watling Street. Pop. 18,000.

Brownian Movement, the name given to a phenomenon discovered by Robert Brown in 1827. On viewing through a microscope a liquid such as gamboge solution, in which small particles are in suspension, these particles are seen to be in constant motion backwards and forwards without any regularity or co-operation. Brown suspected living matter, but it has been shown by Gouy and Perrin that the phenomenon would follow from the molecular structure of matter, being produced by molecular bombardment. This theory is strengthened by the observation that the motion of smaller particles is greater.

Brownie, in the folk-lore of Scotland a goblin of the most obliging kind. He was never seen, but was only known by the good deeds which he did. He usually attached himself to some farmhouse in the country, and he was only noted by the voluntary labour which he performed during the night. He would churn, or thresh the corn, or clean all the dairy utensils, or perform some equally good-natured labour. His work was always done at night. The country people had great faith in the good works of the B. and believed in him implicitly. His reward was usually a dish of cream. The B. bears a strong resemblance to Robin Goodfellow in the Eng. and the Kobold of Ger. literature, whilst some comparison can be made between him and the household gods of the Romans and the Russian domovoy. Bs. were often the cause of the mysterious disappearance of things, and in this respect can be compared with the jinns, or jinnees, of the Arabs, and also to the pixies of S.W. England. Practically every known folk-lore has its special fairy which can be compared to the B.

Browning, Elizabeth Barrett (1806–61), poetess, was b. at Carlton Hall, Durham, on March 6, but the greater part of her life was spent in Herefordshire, at a place called Hope End. Suffered from injury to her spine and for many years she was under the shadow of threatened consumption, and frequently suffered family bereavements, circumstances which affected her style of writing in no small degree. Among these bereavements was the death by drowning of a brother, the witnessing of which gave her a shock the effect of which never left her. A more tangible influence was that of her husband, Robert B., the poet, whom she married in 1846 against the wishes of her family. Previous to this she had pub. sev. attempts in literature; in 1825 appeared *An Essay on Mind, and other Poems*. Her trans. of Æschylus's *Prometheus Bound* was pub. in 1833 and *The Seraphim* in 1838, while during this period she contributed to the *Anthenæum* and other periodicals; in 1844 appeared an issue of *Poems*, in two vols., and a new, greatly enlarged ed. in 1850. The first of these vols. contained the poem *Lady Geraldine's Courtship*, leading to her acquaintance with her future husband. The marriage proved an ideal one, and Mrs. B. was restored to comparative health by her residence in Florence, where the only child of the marriage was b. In 1852 appeared *Casa Guidi Windows*, II. in setting and sentiment. *Aurora Leigh* in 1856 was a long 'sociological' romance or 'novel in verse' and proved a distinct departure from her previous work. In the *Poems before Congress* (1860) her husband's influence was plainly discernible. She d. at Florence on June 30, 1861, and in the next year a vol. of *Last Poems* was issued. It has been said that Mrs. B.'s popularity was assured when her husband's was still problematical. Certain it is that up to the publication of *The Ring and the Book* she was by far the better known. Her easy style, incoherent

and fatally voluble though she might be occasionally; her interest in her own time, as exemplified in *The Cry of the Children*; her romantic tendency which sometimes leads her into 'gush,' as in the *Rhyme of the Duchess May*—all these combined to make her peculiarly acceptable to the reading public at large. She has been called the greatest Eng. poetess, but her work, though musical and metrically beautiful, is so marred by her inability to understand the value of rhyme sounds, that as an artist she must give place to Christina Rossetti. She certainly is the most voluminous poetess, and has impressed her character best upon her work.



ELIZABETH BARRETT BROWNING

Her supply of words is extraordinary, and she has a wonderful power of pathos. Like her husband, she is at her best in lyrical work; with the exception of one or two pieces, practically all her other writing might with advantage be compressed. In the *Sonnets from the Portuguese* (1850), which were addressed to her husband, we have work of such exquisite beauty that it bears comparison in tone, sentiment, and execution with some of the best in our language. There are many of the shorter pieces of whose beauty much might be said. Her faults, if obvious, are but blemishes; and the jewels of her work are to be ranked for ever as precious stones and set in the casket of our literature. Eds. of her works are innumerable. See lives by J. H. Ingram, 1888, and L. C. Clarke, 1929; Dorner Creston, *Andromeda in Wimpole Street*, 1932, and Virginia Woolf, *Flush: a Biography*, 1933. See also K. E. Royds, *Elizabeth Barrett Browning and her Poetry*, 1912.

Browning, John Moses (1855-1926), inventor of small arms, b. at Ogden, Utah,

son of Jonathan B., a gunsmith and a member of the Mormon community. His name is a household one in connection with numerous small arms, especially automatic. His breech-loading single-shot rifle was patented in 1879 and bought by the Remington Company. His next patented designs were those for his repeating rifle, 1884, and the Colt machine-gun, which latter was accepted by the U.S.A. army. It was in 1895 that B. patented his box magazine. Perhaps his best-known weapon is his 'B. revolver,' which was manufactured at Liège in large quantities and much used in the First World War. During that war the war dept. of the U.S.A. held a test of guns, the result being that a new weapon, designed by B. and capable of firing nearly 40,000 rounds before suffering a breakage, was adjudged the best. It was also during the First World War that B. designed an automatic rifle weighing no more than 15½ lb., this design also being adopted by the U.S. Army. The Winchester and Stevens sporting rifles and other types of sporting weapons were also B.'s designs.

Browning, Oscar (1837-1923), historian, was b. in London, son of Wm. Shipton B., merchant. He was educated at Eton and King's College, Cambridge, becoming fellow and tutor of his college. In 1860 he became a master at Eton, where he displeased the headmaster and was dismissed in 1873. He then became univ. lecturer in hist. at Cambridge. He took a prominent part in univ. movements, including those for univ. extension and the training of teachers; he aroused enthusiasm for the study of political science and modern political hist. Three times he stood unsuccessfully for Parliament as a Liberal. He adhered to Christian Science in 1906. Among his contributions to modern hist. are: *England and Napoleon in 1803* (1887); *The Flight to Varennes* (1892); *A History of the Modern World, 1815-1910* (1912); and to lit. hist.: *Dante: his Life and Writings* (1891); *Guelphs and Ghibellines* (1893); *The Age of the Condottieri* (1895). See also his *Memories of Sixty Years* (1910) and *Memories of Later Years* (1923).

Browning, Robert (1812-89), poet, was b. on May 7, in Camberwell. His father was an important official in a bank, and his mother, whose maiden name was Wiedemann, was of Scottish-Ger. descent. Robert never devoted himself to any profession, being first and last a man of letters. His education was not that of the ordinary young Englishman of means, but was privately obtained. During his youth he was noted for his passionate devotion to literature and music, and his intellectual promise was always considered great. Yet, while Tennyson successfully wore down all criticism, and perhaps increased his renown by the acceptance of the laureate's crown, B. had to struggle against the storm of adverse opinion for nearly forty years before his worth was fully recognised. The essential defects of the poet, as they are generally and perhaps unjustly called, are seen in equal

measure in his late and early work. He himself dismissed *Pauline* (1833) as interesting, but unworthy of inclusion among his later works. It is a study in autobiographical form of the development of a soul through many adverse experiences to final peace, and it is a difficult poem because the causes of the successive mental states are unexplained. *Paracelsus* (1835), an imaginative reconstruction of the physician's life, has more of beauty and of interest. Here we get the breathlessness of hurried simile crowding against simile, which later gave rise to much of the criticism of his work on the score of obscurity; but here also are the peculiarly rapid blank verse and his original lyric form. In 1837 he wrote a drama, *Strafford*, at the request of Macready, who produced it at Covent Garden (May 1, 1837), but he was more felicitous in using the dramatic form without much thought of practical application to the stage, as, for example, in *Pippa Passes*, a dramatic fantasy based on the idea of unconscious influence. He was interested less in the conflict of a group of characters than in the fortunes of a single mind; and to give this psychology something of objectivity he invented the 'dramatic monologue,' as exemplified in *Fra Lippo Lippi*, *Andrea Del Sarto*, and *Saul*. His other avowed dramas are *King Victor and King Charles*, on an episode in the annals of the House of Savoy; *A Blot i' the Scutcheon*, a strong domestic drama, but overcharged with narrative; *The Return of the Druses*, a five-act tragedy on the tyranny of the knights of Rhodes; *Colombe's Birthday*, on true love's triumph over worldly ambition; *Luria*, dramatising a fictitious episode in the fifteenth-century struggle between Florence and Pisa, the interest being essentially psychological. In 1840 appeared *Sordello*, the tale of an obscure Mantuan troubadour mentioned by Dante, in which, once again, the real interest is in the development of a soul, though the 'dramatic' background is concerned with the struggles of Guelfs and Ghibellines and of emperor and pope. *Bells and Pomegranates*, a series of 8 pamphlets issued between 1841 and 1846, included *Pippa Passes* and other dramatic pieces, together with *Dramatic Lyrics* (1842) and *Dramatic Romances and Lyrics* (1845). In 1846 B. married Elizabeth Barrett, the poetess, and for the sake of her health removed to Florence. The marriage proved an ideal one; he speaks again and again of his wife in reverent, loving verse: 'My perfect wife,' he calls her. During this period he produced *Christmas Eve and Easter Day* (1850)—companion poems, dealing, the one with evangelicalism, Rom. Catholicism, and rationalism, the other with the essentials of Christian faith and practice—and *Men and Women* (1855), which, like his previous *Dramatic Lyrics* (1842) and later *Dramatis Personæ* (1864), exploit, with considerable success, his device of the 'dramatic monologue' and in all these will be found some of his best work, particularly in the last-named. After Mrs. Browning's death, which

occurred in 1861, B. returned to London, and gave himself up to work. In 1869 appeared *The Ring and the Book*, a huge poem of more than 20,000 lines, which was more than favourably received. It is based on an old MS. B. read in Italy, telling of the murder of a girl-wife by her nobleman husband. The tale is told and retold by each one of the actors, and wonderful art is used in the differentiation of the various characters. The poem is remarkable for its dramatic power and variety, but still more for its boundless humanity and a sustained psychological perception which can have rarely been equalled in poetry. Having at last gained attention, B. let few of the next fifteen years pass without at least one or two vols. from his pen. These included *Balaustion's Adventure* (1871), founded on an incident in Plutarch and embodying a 'transcript' of the *Akestis* of Euripides; *Prince Hohenstiel-Schwangau* (1871), a study of Napoleon III.; *Fifth at the Fair* (1872), an inquiry into the relations of men and women in which casuistry and truth concerning uncertainty in love are strangely blended; *Red Cotton Night-cap Country* (1873) and *The Inn Album* (1875), both melodramas of modern life; *Aristophanes' Apology* (1875), a sequel to *Balaustion's Adventure*, introducing *Heracles*, another 'transcript' from Euripides; *Pacchiarotto and how he worked in Distemper* (1876), in which B. makes an ineffective and not very dignified attack on his critics; a trans. of the *Agamemnon* of Aeschylus (1877); *La Saisiaz* (1878), inspired by the death of a friend, Miss A. E. Smith; *The Two Poets of Croisic* (1878), a narrative poem, concluding on the note that happiness must be the final test of poetic merit; *Dramatic Idylls* (1879-80) and *Jocoseria* (1883), in both of which B. returns to the method of *Dramatic Lyrics* and *Dramatic Romances*; *Ferishtah's Fancies* (1884), a dozen fables, ascribed to a dervish, expressing B.'s religious and moral views, followed in each case by a lyric interpreting its lesson in more emotional terms; *Parleyings with Certain Peoples of Importance in their Day* (1887), a series of critical character studies; and *Asolando* (1889), a final miscellany remarkable for its fine 'Epilogue,' summing up B.'s characteristically optimistic outlook. The greater part of these are written in the curious blank verse which he now affected, and are all marked by the blemishes which even his greatest admirers cannot deny he exhibited in his work. Yet in these appear some of his loveliest lyrics, and indeed it can be affirmed that *Asolando*, which was pub. almost on the same day on which his death took place in Italy (Dec. 12, 1889), contains work as beautiful in form and thought as that in his *Dramatis Personæ* of a quarter of a century earlier. Any estimation of the value of B.'s work must be made more difficult by the fact that towards the close of his life he received an adulation which was as unwelcome in its attitude as unsuited to his dignity. From the formation of the

now defunct Browning Society in 1881 his adherents formed themselves into a kind of defensive and offensive alliance, ready to accept all his doings as good, and to challenge the world on his behalf. Most unwisely, they gave colour to the often reiterated charge of obscurity laid against the poet, by producing handbooks to his works, and even a cyclopædia to all B. references. Such blind devotion defeated its own ends by making the general reader suppose that B. was 'difficult,' and so led to comparative neglect. But following the long period of uncritical neglect and of an equally uncritical cult, which rendered impartial judgment almost impossible, there is clear evidence to-day that, while much of his voluminous writing will be allowed to fall into oblivion, what survives will be accounted among the permanent treasures of modern literature—not least some of his lyrics, such as *The Last Ride Together*, *Prospice*, *Love among the Ruins*, which are noble examples of his art. Though so much of his work is concerned with medieval Italy, yet he is essentially the Englishman in Italy, patriotic in heart, although by choice cosmopolitan. He is, again, the poet of the It. Renaissance, and seems to have caught the very spirit of it; witness the cruel beauty of *My Last Duchess* or the grotesque pathos of *The Bishop orders his Tomb*, to choose only two out of many. His interest in art and music is probably a result of early inclination, and his later surroundings. In his attitude towards nature it may be taken generally that, like Wordsworth, he gives her a personality, but, unlike him, considers that personality distinct from, and usually hostile to, the human. But it is in his dramatic lyrics and monologues that he is most often at his greatest. Such pieces as *The Last Ride Together*, *Rabbi Ben Ezra*, and *Holy Cross Day*, will be remembered when his more ambitious works of greater length lie forgotten. Through them we see the poet himself, hopeful always, tolerant of others, and believing, God being in His heaven, that the best was yet to be. There are few poets who so unconsciously disclose themselves in their works. In religion and ethics B. takes his stand upon two absolute truths—a spiritual faculty in man which enables him to know spiritual reality, and a knowable spiritual reality; and these truths are transcendent to the intellect and are axiomatic. God may be conceived under three aspects—as Power, as Wisdom, and as Love. But the soul craves divine love and this it finds chiefly through its own God-given faculty of love. B.'s ethical teaching is strenuous and militant—life is to be faced boldly and not evaded. B.'s views of poetry and art faithfully reflect these ethical principles and in them unites high spirituality with the frankest acceptance of the natural world (e.g. in *Fra Lippo Lippi*). From the beginning to the end of his long literary career, B. proclaimed God, immortality, and the goodness of things, and if, none the less, he emphasises

the ugliness and evil of the world, he does so in order to prove that the basis of faith remains unshaken even in the worst conditions. It has been well said that B.'s own life had been, in the best sense, fortunate, so that he knew little of the evil which, in the abstract, fascinated him, and had he known more of life he might have come to realize evil as a fierce and positive corruption in human life, and that realization would have deepened his poetry. See lives by W. Sharp, 1890; A. Waugh, 1903; G. K. Chesterton, 1903; W. H. Griffin and H. C. Minchin, 1910 (revised ed., 1938); Fanny Browning, *Some Memories of Robert Browning*, 1928. See also A. Orr, *A Handbook to the Works of Browning*, 1885, 1887; A. Symonds, *An Introduction to the Study of Browning*, 1886, 1906; W. R. Inge, *The Mysticism of Robert Browning*, 1906; E. Rhys, *Browning and his Poetry*, 1914; and F. L. Lucas, in *Eight Victorian Poets*, 1930.

Browning Settlement, founded in 1895 'for the furtherance of the Kingdom of God, as it is declared in the Gospel of Jesus Christ . . . by every means available to promote the full and happy development of body, mind, and soul.' The settlement is a centre of lively effort for improving the conditions of life in Walworth (a suburb in S.E. London), for educating the citizens and beautifying the neighbourhood. It has founded the Bethany Homes for the Aged at Whyteleafe, Surrey. Address of Settlement: Browning Street, Walworth.

Brownists, see BROWNE, ROBERT.

Brown-Séquard, Charles Edward (1817-1894), Brit. doctor and physiologist. He was b. at Mauritius. His father was an Amer. in the naval service, and his mother a Frenchwoman, but he always wished to be known as a Brit. subject. He took his medical degree at Paris in 1846, and returned to Mauritius intending to practise there; however, he went from there to America in 1852. He attracted considerable attention by his lectures on the pathology of the nervous system. In 1864 he became prof. of physiology at the Univ. of Harvard, and five years later he returned to Paris as prof. of pathology in the School of Medicine there. Later, in 1873, he set up in New York as a practitioner and a nerve specialist, but again returned to Paris when, in 1878, he became the prof. of experimental medicine in the Collège de France. He remained in this position until his death. He was the first to show that organs can supply to blood secretions (hormones, *q.v.*) which affect other parts of the body. He contributed largely to the medical knowledge of the period, especially to the knowledge of the nervous system.

Brownsea, is. in the entrance of Poole harbour, Dorset. Also known as Branksea. On it are a Gothic church and a Tudor castle.

Brownson, Orestes Augustus (1803-76), Amer. philosopher and theologian, was b. at Stockbridge, Vermont. He was in turn a Presbyterian, a Universalist, an Independent, a Unitarian, and a Rom. Catholic. He wrote strongly and with

great fervour on all the theological and philosophical questions which agitated his times. He founded the *Boston Quarterly Review* (1838) and *Brownson's Quarterly Review* (1844). His chief works were *Charles Elwood, or the Infidel Converted* (1840), a book in which he strongly supported the Rom. Catholic Church, and *The American Republic; its Constitution, Tendencies, and Destiny* (1865). See A. M. Schlesinger, *Orestes A. Brownson*, (New York), 1939.

Brownsville, co. tn. of Cameron co., Texas, U.S.A., on the Rio Grande, 25 m. from its mouth, in the gulf of Mexico. In 1846 there was a notable bombardment of a small U.S. force which had occupied the place. The Amer. army defeated a superior number of Mexicans near here. Pop. 22,000, of whom many are Mexicans.

Brownwood, city in Brown co., Texas. U.S.A. Pop. 13,300.

Broxburn, vil. of Linlithgowshire, 6 m. S.E. of Linlithgow, and 12 m. W. of Edinburgh, chiefly known for its shale oil-works. Pop. 8,300.

Bruay-en-Artois, tn. of France dept. of Pas-de-Calais, situated on the Lawe. B. is an important industrial tn. in a rich coal-mining dist. Brewing, sugar-making and glass-making are also carried on. Pop. 30,000.

Bruce, Sir David (1855-1931), military physician, b. at Melbourne, Australia. Educated at Stirling High School and Edinburgh Univ. Entered R.A.M.C., 1883. Assistant-prof. of pathology, Netley, 1889-94. In 1899, fellow of Royal Society, for which he undertook commissions of inquiry into diseases in Malta, Uganda, and Nyasaland, especially sleeping-sickness or trypanosomiasis. In the First World War he was chairman of the pathological committee of the War Office. President Brit. Association, 1924.

Bruce, Edward (c. 1549-1611), advocate, actively upheld, in 1587, the rights of the lords spiritual to sit in Parliament. Both in 1594 and 1598 he was sent on a mission to Queen Elizabeth, the first time to suggest that she was encouraging popish conspiracy by befriending Bothwell. He accompanied King James to England on his accession, having, in 1601, by his diplomacy opened up the famous correspondence between his master and Sir Robert Cecil.

Bruce, James (1730-94), Scottish explorer of Africa. He was b. in Stirling-shire, and was educated at Harrow and Edinburgh Univ. He commenced studying for the Bar, but entered the wine business on his union with the daughter of a wine merchant. The sudden death of his wife, occurring within less than a year of their marriage, led to his subsequent travels in Spain and Portugal. He examined some E. MSS. in the Escorial, and the consequent enthusiasm developed into the adoption of his career as an explorer. He was selected as Brit. consul of Algiers, and given a commission to study the anct. remains there. In 1765 he commenced an exploration of the ruins of Barbary, and after an examination of most of the

ruins of E. Algeria he travelled to Tripoli and thence to Candia. During the wreck of his ship he was obliged to swim ashore. He subsequently travelled through Syria, staying at Palmyra and Baalbek. He reached Alexandria in 1768, and successfully accomplished a long-cherished dream, the discovery of the source of the Blue Nile in 1770. In the course of his journeys, from 1768 to 1773, in Abyssinia, he was made chief or governor of Ras-el-Feel, a fact which illustrates the influence he readily acquired in strange lands. His *Travels to Discover the Source of the Nile* (1790) shows much familiarity with Lat. and Gk. texts, and in thus building on a classical foundation, he is to be compared with James Silk Buckingham (q.v.). The scepticism with which his account was received in London proved a great disappointment, and he retired to his estate at Kinnaird. Though a man of notorious vanity, he recovered from his pique sufficiently to publish an account of his travels in 1790, and though the expert criticism of its authenticity was then strong, the main facts have since been corroborated, notably by Lieut.-Col. Playfair. His unfinished autobiography was pub. in part in the (1805, 1813) eds. of the *Travels*.

Bruce, James Robert Thomas, see ELGIN, EARLS OF.

Bruce, Michael (1746-67), Scottish poet, son of a poor weaver. He was b. at Kinnesswood, Kinross-shire. His education was seriously hampered by his interrupted attendance at school, for he was often required to act as herdsman. His health was delicate and his manner quiet and devotional. Circumstances proved sufficiently kind to allow his subsequent entry into Edinburgh Univ. for four sessions, and for a short time he kept a school. His longest poem, *Lockleven*, written in spite of broken health, shows the influence of James Thomson. His best poem is his *Elegy written in Spring*. His promising career was cut short by consumption in 1767. The authorship of the famous *Ode to the Cuckoo* beginning 'Hail, beauteous stranger of the grove' is contested, some ascribing it to B., others to his editor, the Rev. John Logan, who himself claims the *Ode* as his. See LOGAN, JOHN. John Logan is alleged to have stolen many of his poems.

Bruce, Robert (1274-1329), the national hero of Scotland. On the death of his father in 1304, he became sixth lord of Annandale. At the beginning of his career he supported Edward I., hoping, doubtless, to secure his father's accession to the Scottish throne. Thus as earl of Carrick he swore fealty to the Eng. monarch at Berwick, and in 1297 renewed his oath at Carlisle. Shortly after this, however, he served with his vassals, under Wallace, the popular leader in the war of Independence, but after the capitulation of Irvine he was again at peace with Edward. In 1298 he was once more a rebel, and burned the castle of Ayr, whilst five years later he was again fighting on the Eng. side, during the siege of Stirling. Henceforward, however, there was no

vacillation; he appears always as champion of his nation's liberty, as one who, five centuries later, was to be the inspiration of many a patriotic song from the fervid pen of the national poet, Burns. His secret alliance with Lamberton, bishop of St. Andrews, undertaken as a means of defeating Edward's ambitious projects, was an important step in his career. For of all the clergy, Lamberton had been the most loyal supporter of Wallace, and was therefore, after his meeting with B., a firm bond of union between the two leaders in the national movement. But the turning-point in B.'s career was the murder of the Red Comyn, in 1306, on the high altar of the church of the Friars Minor, Dumfries. B. had probably made some compact with Comyn, who was Balliol's nephew, as to their respective claims to the throne. It is certain, at least, that when they were together in the church, a violent quarrel ensued, the consequence of which was that B., in an access of uncontrollable passion, stabbed his rival. Realising that he was guilty alike of assassination and sacrilege, he ran outside to his followers, crying: 'I must be off, for I doubt I have slain the Red Comyn.' 'Doubt!' retorted Kirkpatrick. 'I'll mak sikker!' and with that he rushed into the church to dispatch the dying foe. Hastening to Lochmaben Castle, B. gathered his adherents together, and two months later was crowned king by the bishop of St. Andrews at Scone. Events, however, soon happened which seemed to fulfil his wife's prophecy that he would be a summer but not a winter king. In June 1306, he was surprised by the earl of Pembroke, commander-in-chief of the Eng. army, in Methven wood, and was compelled to seek refuge in the moors of Athole. Two months later he suffered a second defeat, near the head of Loch Tay, at the hands of the Comyn's uncle, lord of Lorn. Leaving his queen at Kildrummy Castle, Aberdeenshire, he was obliged to lead a wanderer's life in the W. Highlands, until he managed to escape to the is. of Rathlin (off Antrim, Ireland). Many are the stories, which Barbour collected from the people themselves, of the hairbreadth escapes of B. and of his valour and calm submission throughout all the vicissitudes of fortune. Meanwhile his friends at home gave him up for dead, and Edward proceeded with his work of vengeance. The castle of Kildrummy was captured, its defenders were slain, and the queen was ruthlessly taken from the sanctuary of St. Duthac, at Tain. B.'s lands were confiscated and he and his followers were excommunicated. But B.'s days of hardship and reverse were nearly over. Early in 1307 he landed at Carrick, and though he was forced for a time to take refuge in the hills of Ayrshire, he rallied his forces, and at Loudon Hill subdued the Eng. under the earl of Pembroke. His final success was assured by the death, in 1307, of his formidable adversary, King Edward. Edward II. so effectually wasted time over the funeral and the fascinations of court life, that by 1308 B. was in possession of all the great

castles, with the exception of Stirling. And this stronghold, too, fell into his hands after his memorable defeat of the Eng. at Bannockburn (1314). His superior generalship had deprived the enemy of their huge numerical advantage. It was an epoch-making victory, for never again did an Eng. monarch conquer Scotland. In 1318 B. captured Berwick, which was henceforth a Scottish, instead of an Eng., frontier tn. On the accession of Edward III., the Scots made wide incursions into the N. countries, but the treaty of Northampton (1328) finally closed hostilities. By its chief clause 'Scotland shall remain to Robert, king of Scots, and his heirs, free and undivided from England, without any subjection, servitude, claim, or demand whatsoever.' The fighting days of B. were now over. The last two years of his life were passed at Cardross Castle, on the Firth of Clyde. He was a victim to the ravages of leprosy, which he had contracted during his campaigns. On his death his heart was extracted, embalmed, and given to Sir James Douglas, who was to have carried it to Jerusalem, but he d. whilst fighting the Moors in Spain. The relic was finally deposited in the monastery of Melrose, whilst B.'s body was buried in the abbey church, Dunfermline. In Sir Walter Scott's poems will be found many references to this story. Such was the end of the Scottish national champion. His distinction as lawgiver and administrator was not inferior to his military genius. Besides providing equal justice for rich and poor, reforming the abuses of the feudal laws, and procuring a settlement of the succession from the estates, he made many wise provisions for the defence of the realm; the garrisoning of tns. and border castles, the arming of able-bodied men, etc. Nor did he neglect commerce. The constant encouragement he gave to shipbuilding suggests that he foresaw its future importance to his country. Lives by Sir H. Maxwell, 1897; A. F. Morrison, 1899.

Bruce of Melbourne, Sir Stanley Melbourne Bruce, first Viscount (b. 1883), Australian statesman, was b. at Melbourne (Victoria), son of John Bruce, and was educated at Melbourne Grammar School, and at Trinity Hall, Cambridge. He was called to the Bar in the Middle Temple in 1907; but soon afterwards became a partner in the Australian importing firm of Paterson, Laing & Bruce. He served in the First World War as an officer of the Royal Fusiliers; was wounded at Suvla Bay, and again in France; and, having been awarded the Military Cross, was invalided, and returned to Australia in 1917. In 1918 he entered the Commonwealth Parliament as member for Flinders. In 1921 he represented Australia at the League of Nations Assembly, and became Commonwealth treasurer; second-in-command to Wm. Morris Hughes, the Prime Minister—an ex-member of the Labour party, who had formed a National party, to which B. adhered as a member of the Liberal wing. In 1922, on the resignation of Mr. Hughes, B. became Prime Minister

and minister for external affairs, forming a coalition of the National and Country parties. He was in London in 1923, and was made a Privy Councillor. He also attended the Imperial Conference of 1926. He added to his duties those of minister of health, 1927-28, and of minister of ters., 1928-29. In 1929, having been frustrated in his efforts to work the Commonwealth Labour Arbitration Law, he introduced a Bill to abolish the federal jurisdiction in arbitration cases. He was outvoted on this measure, the opposition being led by his former chief, Mr. Hughes, and was heavily defeated at the ensuing general election, being succeeded as premier by the Labour leader, Mr. Scullin. Became resident minister in London in the late Joseph Lyons's first Cabinet, 1932, and, later, high commissioner for Australia in London. President of the Council of the League of Nations, 1936. His long term of office as high commissioner for Australia in London was not ended until after the Second World War. Raised to the peerage after the war.

Bruce, William Speirs (1867-1921), Scottish explorer and geographer, son of Samuel Noble B., an Edinburgh surgeon. In 1892 he went out as naturalist of the *Balena*, one of a little fleet of four ships bound for the Antarctic and the adjacent seas. This expedition went out chiefly in the interests of commerce—to look for the valuable Greenland whale. But the Royal Society and the Meteorological Society equipped the fleet with scientific instruments, and appointed officers to undertake the work of observation and research. In 1902 he was the leader of an expedition of which he wrote a report: *The Scottish National Antarctic Expedition—Scientific Results of the Voyage of the S.V. 'Scotia' during the Years 1902-4*. On this expedition he discovered Coats Land. In 1911 he issued *Polar Exploration*. His later studies were chiefly of Spitzbergen, which he had visited at the end of last century, and which he revisited 1906, 1912, 1914, and 1919.

Brucea is a genus of plants of the Simarubaceae, named in honour of James Bruce, the traveller in Abyssinia. *B. antidysenterica* is a native of Abyssinia and is said to be a tonic and an astringent; the leaves and seeds of *B. Sumatrana* are intensely bitter and possess the same medicinal properties.

Bruch, Max (1838-1920), Ger. musical composer, b. at Cologne. His early teaching was by his mother. He won the Mozart Prize at Frankfurt and then studied under Hiller and Reinecke at Cologne and afterwards became a music teacher there. His first opera was a setting of Goethe's *Scherz, List und Rache* (Cologne, 1858); his second, *Lorelei* (Mannheim, 1863). Later he went to Berlin where he wrote an indifferent opera, *Hermione* (1872). He resided in England from 1880 to 1883 and was for a time conductor of the Liverpool Philharmonic. In 1893 he was made director of the Hochschule in Berlin. His reputation in Germany rests chiefly on such works as

Frithjof (1864) for male chorus and orchestra and *Odysseus* (1872) for mixed chorus and orchestra; but he is best known in England for his instrumental works, especially those for violin or cello with orchestra, of which the G minor Violin Concerto is the most famous, others being *Kol Nidrei* for cello and orchestra and the Scottish Rhapsody.

Bruchsal, manufacturing tn. and railway centre on the Saalbach, 12 m. N.E. of Karlsruhe, in Baden. It has one of the finest castles in Germany. Pop. 17,000.

Bruchus is the typical genus of the coleopterous family Bruchidae. The females deposit their eggs in the seed-cases of leguminous plants, and the matured larva feeds on the seeds, and may thus do much damage. *B. pisi* is a native of Britain which devours peas, *B. fabae* beans, and *B. granarius* vetches and beans.

Brucine (C₂₂H₂₅N₂O₄), vegetable alkaloid found in company with strychnine in nux vomica and false Angostura bark, from which latter it was first isolated in 1819 by Pelletier and Caventou. B. is a tertiary base closely allied with strychnine, but is more soluble in alcohol and water, is less bitter, and has a much less poisonous effect on the system. The anhydrous alkaloid melts at 178°. The crystalline form is prismatic and contains ordinarily four molecules of water. It turns a bright red colour with nitric acid, which yields nitro-derivatives, and at the same time acts as an oxidising agent.

Bruck: 1. Small tn. of Lower Austria, on the Leitha, 24 m. S.E. of Vienna. It dates from the third century, and has a fine castle. Pop. 6000. 2. Tn. in Upper Styria, Austria, near the confluence of the Mur and Mürz, 108 m. S.W. of Vienna by rail. Pop. 11,000. 3. Mrkt. tn. in Bavaria, on the Regnitz, 15 m. W. of Munich by rail. The Cistercian monastery is now used as barracks. Pop. 3000. 4. Tn. in Switzerland (see BRÜGG).

Brückenaue, fashionable watering-place of Lower Franconia, Bavaria, 36 m. N.W. of Würzburg, with mineral springs, pleasantly situated in the valley of the Sinn, about 2 m. from the tn. Pop. 2400.

Brucker, Johann Jakob (1696-1770), Ger. historian of philosophy. He was a native of Augsburg, and was educated at Jena Univ., where he graduated in 1718. In 1723 he became par. minister of Kaufbeuren, and eight years later was elected a member of the Academy of Sciences at Berlin. His chief work is *Historia Critica Philosophiae* (1742-44), which attained immediate success. His other works, now little known, include *Olium l'indelicum* (1731) and *Erste Anfangsgründe der Philosophischer Geschichte* (1751).

Brückner, Alexander (1834-96), Russian historian, b. at St. Petersburg. He was intended for commercial life, but, renouncing this, he became a student first at Heidelberg, then at Jena, then at Berlin. He was appointed to the chair of hist. at St. Petersburg, Odessa, and Dorpat successively. B. wrote in Russian and in Ger. He is known chiefly by his very

notable works on the hist. of civilisation. His *Kulturhistorische Studien* was pub. in 1878. Other works are: *Peter der Grosse* (1879); *Katherina die Zweite* (1883); *Beiträge zur Kulturgeschichte Russlands* (1887); *Geschichte Russlands bis z. Ende der 18. Jahrhunderts* (1896-1913).

Bruckner, Anton (1824-96), Austrian organist and composer. He was the successful competitor for the post of organist at Linz Cathedral in 1853; then he became organist at the Hofkapelle, in Vienna, where he was also a prof. at the conservatorium. He is noted for his wonderful extemporisations. B. played in Paris and London in 1869. Among his compositions his nine symphonies are the most important, but he remains outside Germany and Austria an enigmatic figure (Scholes). He may be classified as a classic-romantic, with, it is said by some, a resemblance to Schubert.

Brudenell, James Thomas, see CARDIGAN, EARL OF.

Brueghel (Breughel), **Pieter** (c. 1529-69), Flemish painter and founder of the family of that name, which became famous for painters. B. at Brueghel, near Bruges, he was the son of a peasant, and received instruction during his youth in painting, afterwards travelling fairly extensively in France and Italy. He became a member of the academy of Antwerp about the year 1551. His work is distinguished by its humour, and he generally portrays a rustic subject. His son Pieter (1564-1637) is known as Hell B., because of the weirdness of the subjects which he usually chose to paint. Another son, Jan (c. 1569-1642), known as Velvet B., is noted for his studies of still life and for his land and sea-scapes. He travelled extensively in Italy, living for some time there. He painted parts of the landscapes of some of Rubens's pictures.

Bruening, Heinrich (b. 1884), Ger. statesman and economist, b. in Münster of a middle-class family; had a brilliant school career but was shy and delicate. Studied law at Munich, hist. and literature at Strasbourg, and political science at Münster and Bonn. Volunteered for military service and was a machine-gun officer and, later, a member of Winterfeldt's 'suicide group.' The war gave him confidence, and in 1918 he drifted to an organisation which sought to interest the univ. type of mind in social work. Became secretary to Stegerwald, founder of the Catholic trade union movement and Prussian minister for social welfare. When Stegerwald became Prime Minister of Prussia, B. succeeded him as manager of the Catholic trade unions. In 1924 Stegerwald secured his election to the Reichstag for Breslau. B. soon became famous as an orator with a grip of facts and figures. In 1929 he was elected parl. leader of the anti-Socialist right wing. When, in 1932, Hindenburg accepted him as chancellor of the Reich, B. was the youngest man who had ever held that office. Initiated dictatorial rule with emergency decrees owing to the inability of any party to provide a working

majority in the Reichstag. But his tenure of office ended after a few months, ostensibly on account of his small-holdings scheme for E. Prussia, which certainly excited the animosity of the landowners, but really because he was anti-Nazi in sympathy and tried to restrain the abuses of the Nazi leaders. While he may go down to hist. as the philosopher-economist who was really responsible for the final overthrow of democratic institutions in Germany, and for the introduction of a tyranny founded on a distortion of the principles of Plato's *Republic*, he was a conscientious chancellor about whose Christian principles and sincere intentions there can be no doubt. After a year of Nazi rule, he left Germany. Became supernumerary fellow and lecturer in political theory at Queen's College, Oxford, 1937. Went to America to become lecturer and tutor at Harvard Univ. in the hist. of gov. and economics. Consult R. T. Clark, *The Fall of the German Republic*, 1935.

Brueys, David Augustin de (1640-1723), Fr. theologian and dramatic author. B. early abandoned his career as a lawyer, and gave himself up to theological controversy. Attempting to refute Bossuet, he was himself converted by Bossuet from Protestantism to Catholicism, became a priest, and wrote now chiefly with the object of converting Protestants. An ardent frequenter of the Comédie-Française, B. soon began to write plays himself, generally in collaboration with Palaprat, so as to avoid publishing in his own name. He gained his reputation chiefly as the author of *Le Grandceur*, *Sol toujours sol*, and *L'Avocat Patelin*. This last comedy (an adaptation of a medieval farce) gave rise to the adjective *patelin* applied to a person who tries to gain his ends by flattery and fine words.

Bruges (Flemish, **Brugge**), the city of bridges, cap. of the prov. of W. Flanders, Belgium, situated about 60 m. from Brussels and 8 m. from the N. Sea, at the junction of sev. important railways and canals. It is situated in lat. 51° 12', long. 3° 13' E. The tn. still keeps its medieval appearance to a very great extent, and the effect of this is added to by the retention of its old city walls and its medieval fortified gates, making of Bruges the most picturesque tn. of Belgium. The old city is remarkable for the antiquity and grandeur of its old Gothic buildings. In particular two of its Gothic buildings, both of which date back to the fourteenth century, may be mentioned, the cathedral of St. Sauveur and the church of Notre-Dame. The cathedral still has a magnificent appearance, but was much damaged in the fire of the early part of the nineteenth century, and contains a number of interesting and valuable pictures. The church of Notre-Dame contains the tomb of Charles the Bold and of his daughter Mary of Burgundy, and has also a collection of marble statues, one of which is by Michelangelo. Amongst other buildings of interest which may be mentioned are: the Halle with a Gothic belfry and the most magnificent chimies in

Europe; the Palace of Justice, and the hôtel de ville. The chief manuf. of the tn. is lace, which gives employment to a very great number of people. Other manufs. are linen, woollen, and cotton, yeast, bristles, embroidery, and printing. By means of its canal communications it can trade with a number of the parts of Europe, and in particular mention may be made of the ship canal to Zeebrugge, which has opened up and developed the trade with Hull. The hist. of the tn. is also interesting. It dates probably from before the seventh century, and owes its name to the fact that the city originated at a bridge (*brug*) over an inlet of the sea.



John H. Stone

THE GOTHIC BELFRY OF BRUGES

The spot was first fortified by Count Baldwin of the Iron Arm, who made it his chief residence. By the twelfth century it was recognised as the most important tn. in, and the cap. of, Flanders, and it was here that the various counts were proclaimed. During the thirteenth and fourteenth centuries B. claimed equal place with Ghent, and was the recognised centre of the Hanseatic League in middle N. Europe. Its commerce was developed along wise lines, and it speedily assumed and for some time kept the premier position amongst the trading tns. of Europe. The order of the Golden Fleece was instituted here by Philip the Good in 1430. In the fifteenth century it rose up in revolt against the Duke Maximilian, and the measures of repression which were adopted gave the first severe blow to the trade of the city. Its pop. at this time probably exceeded 200,000. The decline was completed by the persecution of Alva and Philip II.; and additionally by the silting

up of the estuary on which the city was situated. Many of the traders and merchants fled the tn., and its prosperity rapidly declined. It was captured by the Fr. in 1794, and became part of the United Netherlands in 1815. Later, in 1830, it became a part of the kingdom of Belgium. It was occupied by the Gers. during the four years of the First World War, but little damage was done to it. It was again occupied by the Gers. from 1940 to 1944. In 1942, when the Gers. organised a defensive line along the coast 12 m. deep, the city became crowded with refugees from the coastal belt. The pop. at the present time is 53,000.

Bruges, Roger of. See WEYDEN, ROGIER VAN DER.

Brugg, tn. of 4000 inhab. in the Swiss canton of Aargau. In the museum are many relics of the Rom. camp Vinodissa. The large lunatic asylum of Königsfelden has taken the place of the abbey dissolved in 1523, but the disused church has been restored and contains the skulls of four Austrian knights and a duchess. The par. church of B. dates from 1480.

Brugmansia. Parasitic plant belonging to the Rafflesiaceae, or the larger order Cytinaceae. There are only three species, all of which are natives of the Malay Archipelago, and they are all devoid of chlorophyll and foliage leaves. They are parasitic on roots of Leguminosae.

Brugsch, Heinrich Karl (1827-94), eminent Egyptologist, was the son of a cavalry officer, and was b. in the barracks at Berlin. The patronage of Frederick William IV. enabled him to visit the prin. museums of Europe, and he first went to Egypt in 1853, being sent there by the Prussian Gov. He there made the friendship of Mariette, the Fr. archaeologist, and joined him in his excavations at Memphis. He was for some time prof. of oriental languages at Göttingen, but afterwards (1870) became director of the school of Egyptology at Cairo. Among his chief works were *Geographische Inschriften ägyptischer Denkmäler* (1857-1860) and *Geschichte Ägyptens unter den Pharaonen* (1877).

Brühl, tn. of Rhineland, Germany, 8 m. S.W. of Cologne, pleasantly situated on a spur of the Eifel Range; pop. 12,000.

Brühl, Heinrich, Count von (1700-63), chief minister and favourite of Frederick Augustus II. (otherwise known as Augustus III.), king of Poland and elector of Saxony, b. at Weissenfels. Beginning life as a page in the service of the Duchess Elizabeth of Saxe-Weissenfels, he became Prime Minister to Augustus II. in 1746, and aided and abetted that monarch in all his extravagant ways. He played fast and loose with the finances of the country to such an extent that when the Seven Years war broke out, Augustus could only send a small force to meet Frederick of Prussia, and his army was hopelessly beaten by Frederick at Pirna. His library of 62,000 vols. now forms part of the library at Dresden.

Bruin, Cornelius. see BRUYN.

Bruises, injuries in which there is neither breaking of the skin nor breaking or

dislocation of bones when the part of a sentient body is struck by a blow or pinched. They are accompanied by discoloration of the affected part and generally some swelling. The discoloration depends both on the nature of the part struck and the condition of the person; soft parts are more affected than others, the lax tissues of the eyelids being especially liable, and fat people more than thin. The discoloration is produced by the rupture of small blood-vessels below the skin and the passage of blood from them into neighbouring parts, the quantity of blood effused controlling the colour of the injury. In severe cases the subcutaneous tissues may be ruptured, while in the limit the flesh may be so crushed as to produce gangrene. The muscles may also be affected either by a great and sudden muscular effort or by a blow, and there is a chance of the muscle being paralysed or even being entirely killed. A surface bone when struck will generally produce a swelling of the periosteum, and the bruising of certain vital parts is accompanied by nausea and faintness. In persons affected with constitutional diseases such as gout or rheumatism, it is generally found that their particular disease attacks most seriously any part that has been bruised seriously at any time. Bruising of the brain and spinal cord which may result from blows on the head or severe shaking are known as concussion. It is often necessary to know whether a bruise has been inflicted before or after death, there being a period (about two hours) after death in which a bruise can be inflicted although less seriously than before. Those inflicted after death can be distinguished from others by the fact that they are not generally accompanied by swelling, and an incision fails to discover much coagulated blood. The treatment of a bruise will depend upon its nature and the time which has elapsed since it was obtained. A cold compress helps to stop the hemorrhage from the blood-vessels and at the same time favours coagulation, the cold raw beefsteak of the pugilist being a remedy of this type. During this process the part treated should be at rest. When, however, the bruise has been left to itself and the discoloration is in evidence, the treatment consists in promoting circulation in the part for the purpose of carrying away the coagulated blood. Brisk movement or massage has this effect, or use may be made of local stimulants such as friar's balsam or poultices of hazeline. All severe cases should be taken to a doctor as soon as possible, or unpleasant complications may set in.

Brülov, or **Brylov**, **Constantin Karl Pavlovitch** (1799-1853), Russian painter, b. at St. Petersburg, and d. at Marciano, near Rome. At Rome he made copies from Raphael, by order of the tsar, the most notable being 'L'Ecole d'Athènes.' On his return to Russia, he was appointed painter to the court, and in 1836 prof. at the St. Petersburg Academy. Among his most noteworthy pictures are 'Le Dernier Jour de Pompéi'; 'La Mort d'Inez de

Castro'; 'Le Siège de la ville de Pskov'; 'La Mort de Laocöon'; 'Le Baiser de Judas'; 'Portrait de la grande-duchesse Olga Nikolaïevna'; and 'L'Invasion de Rome par Genséric.'

Brumaire, the name (meaning 'foggy month') of the second month of the Republican calendar, estab. in France in 1793. The eighteenth B. (of the year VIII.), corresponding with Nov. 9, 1799, of the Gregorian calendar, was the day on which Napoleon overthrew the Directory and replaced it by the Consulate.

Brumath (Rom. **Brocomagus**), tn. of dept. Bas-Rhin, France, with 5700 inhab. The forest of B. is a favourite resort of the Strasburg townsfolk.

Brummell, George Bryan (1778-1840), known as 'Beau Brummell,' was b. in London. He was educated at Eton and Oriel College, Oxford, and a few years later, upon inheriting a fortune of £30,000, he gave himself up to the pleasures of society in London. He attained notoriety for his taste in dress, though that, while elegant and precise, was never extravagant. For many years he enjoyed the friendship of the Prince of Wales (afterwards George IV.), but they quarrelled in 1813, and soon afterwards gambling losses drove him to France. He lived at Calais for fourteen years, and then (1830) was appointed consul at Caen. A few years later he sank into imbecility, and d. in the asylum of Bon Sauveur, Caen. See W. Connelly, *The Reign of Beau Brummell*, 1940.

Brummen, tn. near Zutphen, in the Netherlands. The Dutch state railway here crosses the R. Yssel. Villas of wealthy Dutch merchants. Pop. 8000.

Brun, Charles Le, or Lebrun, see **Le Brun**.

Brun, Cornelius, see **BRUYX**.

Brun, Rudolf, Swiss magistrate, d. in 1360. He headed an insurrection in his native tn. of Zürich, had himself proclaimed dictator, and prevailed upon the people to establish a new constitution. These events led to his becoming the first burgomaster of Zürich. After a long struggle with the deposed magistrates the Emperor Louis of Bavaria persuaded him to receive a pension and a sum of money in exchange for which he made peace.

Brun, Marie Louise Élisabeth Vigée le, see **LE BRUN**.

Brunanburh is the name of a place, the site of which is not now known. It is said to have been Brunswark, or Birrenswark, in Dumfriesshire. It is also located in Lincolnshire, York-shire, and Lancashire. The place is celebrated as having been the spot where Atheistan and Eadmund his brother won a great victory in 937 over the Eng. Danes, joined by Anlaf of Denmark and Constantine of Scotland. As the invaders entered the country by the Humber and marched southward, the battle is most likely to have been fought in Lincolnshire. After Atheistan had defeated the Danes and their allies at B., he annexed Northumbria, and thus became the first monarch of England to reign with undisputed authority. A stirring ballad was composed in commemoration of the victory, and is found in

the Anglo-Saxon Chronicle. Lord Tennyson wrote a fine version of it.

Brunck, Richard François Philippe (1729-1803), Fr. classical scholar. He was b. at Strasburg, and educated at the Jesuits' College, Paris. As military commissary he participated in the Seven Years war. He ed. many eds. of the Gk. classics, the first being the *Anthologia Græca*, in which his innovations on the conventional mode of criticism, startled European scholars. He took part in the Revolution, lost his pension, and was imprisoned at Besançon. He had brought out an ed. of *Plautus* in 1788 and was about to republish it when he d.

Brundisium, see BRINDISI.

Brune, Guillaume Marie Anne (1763-1815), Fr. marshal, b. at Brives-la-Gaillarde, Corrèze. He commenced studying for law in Paris, and later became a journalist. His friendship with Danton was begun here and also his alliance with the Jacobins. He took part in the military operations of the 13th Vendémiaire as a brigadier-general. He served under Napoleon in 1796, and two years later commanded the Fr. army in Switzerland. Against the Anglo-Russian attack on Amsterdam in 1799 he won a complete victory. On Napoleon's adoption of the imperial title in 1804 he was appointed marshal. In Aug. 1815 he was murdered by the Royalists.

Bruneau, Louis Charles Bonaventure Alfred (1857-1934), Fr. musical composer, b. in Paris. Studied under Massenet, and took second Grand Prix at Paris conservatoire. Best known as a writer of dramatic music, his first score, *Le Rêve*, produced at the Opéra-Comique in 1891, not only being generally praised but notable as a work which has strongly influenced the development of the modern Fr. school. Opinion is divided on the merits of his later work, some critics regarding his technique as rather crude. The libretto of *Le Rêve* was written by Louis Gallet after Zola's novel, and after that B. worked in close co-operation with Zola. Was musical critic to *Le Figaro*.

Bruneck, tn. in the S. Tyrol, Italy, charmingly situated opposite the mouth of the Tauferer Tal, overlooked by an old castle of the bishops of Brixen. Pop. 3300.

Brunel, Muslim sultanate situated on the N.W. coast of Borneo. It is a Brit. protected state included in the federation of Malaya. Area about 2280 sq. m., with a coastline of 100 m., lying between 4° 5' and 5° 2' N. lat. and 114° 3' and 115° 22' E. long., with pop. of 48,000, under Brit. administration since 1906. The chief tn. bears the same name as the sultanate and has a pop. of 12,000. The only other tn. of any size is Kuala Belait at the S.W. end of the state's seaboard. Climate hot and moist with cool nights. The interior is largely jungle with much timber of value. Rainfall varies between 100 and 200 in. for different parts of the state. Apart from the oil and agric. activities, the only major industry is the preparation of bark extract, or cutch, from mangrove. Besides this, there are native crafts, the chief of which

are the manuf. of silverware and brassware and the weaving of silk and cotton sarongs. The B. silversmiths are perhaps the most famous of the Malay Archipelago. The chief agric. products are rubber, sago, and rice. Oil was first found in 1914, but there was no production on a commercial scale until 1932. The forests of B. represent one of the greatest potential assets of the state, but the industry is in an unsatisfactory condition. The chief exports are crude oil, plantation rubber, and cutch. There are two wireless stations. The state has an interesting and somewhat varied hist. A state named Puni, forty-five days' sail from Java, is mentioned sev. times in the annals of the Sung dynasty, which ruled over S. China A.D. 960-1280, and it is practically certain that the reference is to B. In the fourteenth century B. owed allegiance to Malacca. By the sixteenth century it had risen to great power and, in the reign of Sultan Bolkin, its authority extended not only over the N. part of the is. of Borneo, but also over the Sulu Is. and part of the Philippines. The first European account of B. is that of Pigafetta, who sailed with Magellan on his famous voyage round the world. Pigafetta saw B. in 1521 and was greatly impressed by the splendour of the court and the size of the tn. Towards the end of the sixteenth century the power of B. began to decline and by the middle of the nineteenth century it had fallen hopelessly into decay. By a treaty made in 1888 B. was placed under the protection of Great Britain, and in 1906 administration was entrusted to a Brit. resident, who is now adviser to the governor-general of the federation of Malaya.

Brunel, Isambard Kingdom (1806-59), son of the equally famous engineer, Sir M. I. B., was b. at Portsmouth. At a very early age he showed the possession of those qualities which are essential to a good engineer and draughtsman, and he was sent at the age of fourteen to the Collège Henri Quatre in Paris to study. Three years later he entered his father's office, and in 1831 his plans for the Clifton suspension bridge were adopted, and he was put in charge of the work. The bridge, however, was not completed until after his death, owing to lack of funds, but his plans were strictly adhered to, and the chains of the Hungerford suspension bridge were used in its construction, since that bridge, erected by him in 1811-45, had been superseded by the Charing Cross railway bridge in 1862. From 1833 to 1846 he was the chief engineer of the G.W.R.; here he achieved many triumphs, especially in his construction of canals. In addition to his work as a railway engineer, B. also constructed the first steamboat which made regular voyages between America and this country; this was the *Great Western*, which he constructed for the railway company of that name. He was also the designer of the *Great Britain*; his greatest achievement was the construction of the *Great Eastern*, but he only lived long enough to see her get afloat, and did not witness

the beginning of her great voyages. The *Great Eastern* started on its first voyage on Sept. 7, 1859, and on Sept. 15 the great engineer *d.* In addition to his railway and ocean steam navigation work he also helped in the construction of many docks throughout the country. His skill and ability were generally recognised throughout England, and he was made a F.R.S., and an hon. D.C.L. of Oxford.

Brunel, Sir Marc Isambard (1769-1849), inventor and engineer, was *b.* at Hacqueville in Normandy. He was originally intended for the church, but showed a natural ability for mathematics and mechanics, and ultimately joined the navy. With the navy he served for some six years, until, on returning to France in 1792, he found the revolution at its height, and being a pronounced royalist he left the country for the U.S.A. Here, in 1793, he began his career as an engineer. He became chief engineer for New York, and erected a new arsenal for the city, fitting it with some ingenious machinery for boring of his own invention. He sailed for England in 1799, and submitted some plans for making ships' blocks, which were ultimately accepted by the Gov. His machinery saved the Gov. a considerable amount of money in the first year's working, and he was appointed to carry out many other plans for the Gov. at various dockyards. He made experiments in steam navigation, and advised the Gov. to adopt steam tugs for taking warships out to sea, but in 1814, after some actual experiments, the Gov. refused to adopt the idea. In 1821 he became a bankrupt owing to his financial mismanagement and also owing to the fire which destroyed his sawmills at Battersea. His chief claim to fame—and he has many—is the part which he played in the construction of the tunnel under the Thames. The start was made in 1825; the riv. broke through the roof twice, once in 1827 and again in 1828. The work was discontinued in the latter year, and was not again taken up until 1835, the tunnel being finally opened in 1843. Together with his son, I. K. Brunel, he made many experiments. Knighted in 1841, and in 1829 received the order of the Legion of Honour.

Brunelleschi, Filippo (1379-1446), It. architect, *b.* at Florence. To him a revival of the Rom. style is to be attributed. His natural aptitude for mechanism altered his father's intention of arranging for him to follow the profession of notary, and he was accordingly apprenticed to a goldsmith, where he quickly mastered all that was to be learnt. In 1441 he entered a competition for designing the gates of the San Giovanni baptistery. He won merit, though no award. He later applied the laws of perspective to his works, and obtained the contract to complete the church of Santa Maria del Fiore, in Florence. This is his greatest masterpiece, while not far behind in greatness of achievement is the Pitti palace in the same tn. He *d.* in Florence, April 16.

Brunetière, Ferdinand (1849-1906), Fr.

author and critic. He was educated at the Lycée Louis le Grand, served in the Franco-Ger. war, then led for some years a precarious life as a teacher. He began to write for the *Revue des Deux Mondes* in 1875, and became its editor in 1893. From 1886 to 1895 he was prof. of the Fr. language at the École Normale; during this time, too, he lectured with great brilliance, chiefly on Fr. literature. An event in B.'s life—his conversion from materialism to Catholicism—caused an immense sensation throughout France. The first hint of this change was given in a speech at Besançon in 1894, and B. made his famous declaration of faith in 1899, after a private interview with the pope. His article, 'La Science et la Religion,' in the *Revue des Deux Mondes*, roused against him the wrath of almost the whole of intellectual France, and caused a sensation which did not die down for years. In it B. proclaimed 'la banqueroute de la science'; he insinuated that science had failed to keep certain of her promises, and maintained that Christianity was still, and must be, a force to be reckoned with. To refute some unjust criticisms he wrote another article in honour of science. But for ten years onwards he made speeches and pub. writings (such as *Le Besoin de croire* and *Le Motif d'espérer*) to defend his new faith. Among B.'s most important works are: *Le Roman naturaliste* (1883); *Études critiques sur l'histoire de la littérature française* (1806-1907); *L'Évolution des genres dans l'histoire de la littérature* (1890); *L'Évolution de la poésie lyrique en France au XIX^e siècle* (1894); *Nouveaux Essais sur la littérature contemporaine* (1895). In *Le Roman naturaliste* he wages war against the Fr. realist or naturalistic writers, especially those of the school of Zola.

Brunhilda: 1. In the *Nibelungenlied*, the queen of Iceland (Isenlant), wooed by Siegfried for the king of Burgundy, Günther. Kriemhild, sister of Günther, and wife of Siegfried, excites the envy of a B., whose friend, Hagen, one of Günther's followers, discovers the vulnerable point in Siegfried's enchanted body, treacherously slays him, and steals the Nibelung hoard and buries it in the Rhine. In the original Norse legend she was the beautiful daughter of Odin, who, having disobeyed the orders of the god, is cast into a deep sleep on the rock of Hendarfjell and guarded by a wall of fire. Here she must remain until a hero, daring all for her sake, penetrates the wall and frees the 'warrior woman.' 2. A princess of the Visigoths. The daughter of the Visigothic king, Athanagild, she was married to Sigbert, king of Austrasia. Her sister, Calswintha, having been married to the king of Neustria, was murdered by him, and Sigbert tried to avenge his sister-in-law. It was not until after his death that B. began to play an important part in the hist. of the Frankish kingdoms. After sev. hairbreadth escapes from her enemies, she finally wielded the chief power in Austrasia as regent for her grandson. She was finally handed over, a prisoner, into the hands of her enemies,

and by them executed by being dragged to death at the heels of wild horses.

Bruniaceæ is an order of dicotyledonous plants which are natives of S. Africa, and rarely occur in Europe. The species consist of heath-like shrubs, which are abundant at the Cape of Good Hope. The flowers are hermaphrodite, arranged in whorls of five, with either two or three united carpels containing sev. ovules, or with a single carpel containing one ovule. The fruit is a capsule or a nut.

Bruni, Leonardo (1369-1444), It. writer, b. at Arezzo, from which place he obtained the name of Leonardo Aretino by which he is generally known. In 1405 he obtained the appointment of papal secretary, and held the position for ten years under four consecutive popes. He retired to Florence, where he obtained the influence of the Medicean family, and through them the state chancellorship in 1427, which he held until his death. Drawn to the study of the classics in his youth, he did much to advance Gk. learning in his own country, particularly by literal translations into Lat. of the works of Demosthenes, Plutarch, Aristotle, and Plato. His *Historiarum Florentinarum Libri XII* . . . pub. in 1610, was the result of long and thorough historical research, and was the means of securing to him the rights of citizenship. He also wrote original works on the lives of Dante and Petrarch, and the following, among many others: *Epistolæ Familiares* (1472) and *Commentarius Rerum suo Tempore Gestarum* (1476).

Bruni Island is situated off the S.E. of Tasmania. It is 32 m. long, from 1½ to 10 m. broad, and has an area of 160 sq. m. Coal-mining is the chief industry.

Brunig Pass is a pass over the Swiss Alps, joining Meiringen and Lucerne. It is about 3400 ft. at its highest point. In 1889 a railway was opened up.

Brunings, Christian (1736-1805), Dutch hydraulic engineer, b. at Neckeran, who was given the control of the dykes in Holland, and in this capacity carried out sev. important improvements. He is best known by an instrument, bearing his own name, which he invented, and which enables the rapidity of a stream to be gauged.

Brünn (Brno), second largest city of Czechoslovakia, with many manufrs., including woollen goods, linen, leather, jute-spinning, great engineering factories, arms, chemicals, paper and wood ware, sugar and flour. Before 1946 the inhab. of the old tn. were largely Ger., but those of the extensive suburbs were nearly all Czechs. There is a Czech Univ., which was closed by the Gers. during the Second World War. In 1946 there were 6258 students at the University. The old part of the city was once strongly fortified, and it stoutly held out against sev. sieges. It was chosen by Napoleon as his headquarters before and after the battle of Austerlitz. Many suburbs have of late years grown up around the old part, and there are numerous fine buildings, which include a cathedral and sev. churches, a theological college, a gym-

nasium, an orphanage, theatre, lunatic asylum, and many hospitals. There is also the national museum for Moravia. Behind the city, on the hills, is the old castle of Spielberg, which is famous for having been the prison where Silvio Pellico was kept for eight years. There is an immense park, known as the Augarten, which was given by the Emperor Joseph II., of Austria, and there are many smaller parks and public gardens. The educational institutions are very good; there are technical, continuation, elementary, and kindergarten schools. Pop. (1946) 269,000.

Brunna, Robert of, see MANNING, ROBERT.

Brunnen, vil., 3600 inhab., is the most frequented place on the lake of Lucerne after Lucerne itself. There is a station on the St. Gotthard railway, a rack and pinion railway, many hotels and very picturesque scenery. The Forest Cantons renewed their league here in 1315.

Brunner, Emil (b. 1889), Swiss Protestant theologian, born at Winterthur. With Karl Barth (q.v.), pastor of a neighbouring par. during the First World War, led a revival of the Renaissance tradition by developing the so-called dialectic theology (Christian revelation) against modernism and liberalism. B. and Barth differed, however, on the interpretation of the balance between reason and revelation, B. holding that the latter is in congruity with anthropology and the fulfilment of hist. A leading member of the Oxford Group. Works include *Das Symbolische in der religiösen Erkenntnis* (1914); *Die Mystik und das Wort* (1924); *The Word and the World* (1931); *Wahrheit als Begegnung* (1938); *Gerechtigkeit* (1943); *Christianity and Civilisation. First Part: Foundations* (1948).

Brunner, Heinrich (1840-1915), Ger. jurisconsult and historian, b. at Wels, Upper Austria. He studied at Vienna, Göttingen, and Berlin, taught Ger. law at Vienna, was appointed prof. at the univ. of Lemberg in 1866, at Prague in 1870, and afterwards at Strasburg. In 1872 he became prof. of Ger. civil, commercial, and maritime law at Berlin. B. did most valuable research work in the hist. of Fr. law, studying minutely the early laws and institutions of the peoples of W. Europe, especially the Franks. He was the leading authority on modern Ger. law. His chief works are: *Die Entstehung der Schwurgericht* (dealing with the Eng. and the Fr. jury systems), *Deutsche Rechtsgeschichte* (contained in vols. I. and II. of *Bindung's Handbuch der deutschen Rechtswissenschaft* (1887-1892), and contributions to *Monumenta Germaniæ historica*.

Brünnnow, Franz Friedrich Ernst (1821-1891), Ger. astronomer, b. in Berlin. In 1854 he was appointed director of the new observatory at Ann Arbor, Michigan, and made researches into the orbits of comets. Later he became astronomer royal in Dublin, where he worked out the study of the stellar parallax. His chief publication, *Lehrbuch der Sphärischen Astronomie*, trans. by himself, was pub. in England in 1865.

Bruno, Giordano (c. 1548-1600), It. philosopher, b. near Nola, in the kingdom of Naples. At an early age he became a monk of the Dominican order, but was obliged to run away from the convent on account of the heretical views he had expressed. He fled to Geneva, where he remained for two years, but was again expelled by reason of his scepticism, and after journeyings to a number of towns and univs., he secured a post as lecturer in Toulouse and, later, Paris. While in Paris he attracted vigorous opposition by his attacks on the philosophy of Aristotle, and leaving Paris in 1583, under the protection of the Fr. ambas., he reached London, and became acquainted with Sir Philip Sidney. He also lectured at Oxford, but did not, however, stay long in England as he was successful in securing a professorship at Wittenberg, from which in turn he was driven to Helmstadt, and thence to Frankfurt. Returning to Italy in 1592, he proclaimed his opinions in Padua and Venice, and was arrested by the Inquisition, sent to Rome, and tried for heresy. Being convicted and refusing to recant, he was imprisoned and ultimately burnt at the stake, exclaiming that his sentence would cause greater fear to his judges than to himself. His philosophy was of a pantheistic nature, including the Copernican astronomy and the concept that soul or spirit can only exist in matter; that all creation is one life composed of many living members which in their ultimate spiritual and corporeal existence are eternal, and that the life animating the whole is God. His works greatly influenced later philosophers, notably Descartes, Spinoza, and Leibnitz, and in 1889 a statue was erected to him at the place of his execution in Rome. His writings are numerous and include *Spaccio della Bestia Trionfante*, *Della Causa, Principio ed Uno*, and *Del Infinito, Universo e Mondi*; while among the books of reference may be given: C. Bartholmess, *Giordano Bruno* (Paris), 1846; J. L. McIntyre, *Giordano Bruno*, 1903; G. Gentile, *Giordano Bruno nella Storia della Cultura*, 1907; W. Boultong, *Giordano Bruno*, 1916; and V. Spampinato, *Vita di Giordano Bruno*, 1921.

Bruno, Saint (c. 1030-1101), founder of the Carthusians, b. in Cologne and educated there and at Rhelms and Tours. His ability and knowledge were famous throughout the Church, and he was speedily advanced. But having protested against the evil-doing of one of the archbishops, he was forced to seek safety in flight. Later he was offered eccles. preferment, but his appointment was opposed and he retired to a desert near Grenoble, where he founded the Carthusian order, 1084. He was again offered preferment in the Church, but declined it, and devoted himself to his order. He was the author of some commentaries on the Psalms and the Pauline Epistles, but none of his works is extant.

Bruno the Great (c. 925-965), archbishop of Cologne and later count of Lorraine, was the third son of Henry the Fowler. He was one of the most impor-

tant men of his time, distinguished for piety and learning. To him are ascribed a commentary on the Pentateuch and a vol. of lives of the saints.

Brunonia is a dicotyledonous plant which is sometimes placed in the order Goodeniaceae, and sometimes allotted an order to itself, the Brunoniaceae. The genus contains only one species, and that one a herb, with azure-blue flowers, which is found in Australia.

Brunonian System, in medicine a system which regards and treats disease as due to defective or excessive excitation, as sthenic or asthenic. See BROWN, JOHN (1735-88).

Brunow, Ludwig (b. 1843), Ger. sculptor, b. near Lübz in Mecklenburg-Schwerin. He was at first a carpenter, but going to Berlin in 1866, he found a patron in Friedrich Eggers, with whose help he was trained as a sculptor. In 1871 he produced the group 'The Harbinger of Love and the Fulfilled Dream,' a 'Pegasus,' and the reliefs 'Bride of Corinth' and 'Family Happiness.' After two journeys to Italy he was commissioned to execute colossal figures of the emperors Frederick I. and Frederick William II., as well as many groups and busts. Date of death unknown.

Brunsbüttel, Ger. port, coaling station, and harbour on the N. bank of the Elbe in Schleswig-Holstein; the W. terminus of the Kaiser Wilhelm Canal.

Brunswick: 1. Formerly a tn. of co. Bourke in Victoria, Australia, 4 m. N. of Melbourne. Now included in Melbourne. Pop. 45,000. 2. Co. seat of Glynn co., Georgia, U.S.A. It is situated on St. Simon Sound, and is an important port. Its exports are cotton, yellow pine lumber, and naval stores. It has steamship communication with New York and Savannah. Pop. 14,000. 3. City in Cumberland co., Maine, U.S.A. It is situated on the S. bank of the R. Androscoggin, close to its mouth, 25 m. N.E. from Portland. It is a railway terminus, and noted for the Bowdoin College at which Longfellow and Hawthorne graduated. There are cotton and paper mills. Pop. 8000.

Brunswick, cap. of the former Grand Duchy, later Free State and Land, of B., has a pop. of 200,000, of whom only 9000 are Catholics. Noted for automobiles, pianos, and jute-spinning factories. The sugar market was one of the most important in Germany. B. was founded in 1039, and was an important member of the Hansentle League. During the Reformation it favoured the doctrines of Luther, and took an active part in the social and religious wars of the period. It was also the scene of a violent revolution in 1832, and became municipally self-governing in 1834. The auct. fortifications were converted into beautiful promenades in 1803. It contains many medieval churches and timbered houses, few of which escaped damage or destruction in the Second World War. The Altstadt Rathaus, an elegant fourteenth-century edifice, was completely gutted by fire, the Martini

kirche opposite, completed in 1321, was less seriously damaged. A bronze lion erected by Henry the Lion still commemorates him, as do the castle he built in 1175 and the Cathedral he built after his return from the Holy Land. His monument, and that of his wife Matilda within it, is a masterpiece of Saxon sculpture. In the crypt are the remains of Queen Caroline (q.v.), whose wrongs and death so appealed to the Eng. people in 1820-21. The Andreas-built kirche was believed to have been founded by wealthy cripples in 1170. B. was in the hands of Red revolutionists in 1919 until the Ger. Gov. troops occupied the city on April 17. In 1944 much of the city was gravely damaged by bombing, especially on Jan. 30, March 15 and 29, and April 8. (See under AIR RAIDS.) On this last date the Amer. raiders destroyed 148 Ger. planes at B.

Brunswick, a former Free State, later Land of N. Germany. Included in 1946 in Land Niedersachsen (Lower Saxony). It consists of three larger and six smaller pieces of ter. detached and surrounded by foreign ter. The prin. div., containing B., is of oval form, and lies between the former Prussia and Hanover. The second, a long irregular stretch of land, divides Hanover. The third large portion, of irregular shape, was surrounded almost entirely by Prussian ter. The remaining six divs. were mainly in Prussian ter., clustered round the boundaries of Hanover. The area of the whole is roughly 1420 sq. m. (Eng.). The general appearance of the state is hilly, but it also contains large tracts of level land which are of very great value. The state itself belongs almost entirely to the basin of the R. Weser, and its climate, especially in the N., is that of the rest of N. Germany, mild and dry. The land is particularly fertile, fully 50 per cent of it being under cultivation. The agric. produce of the land is good, and cereals, beets, and all kinds of garden produce are obtained. The forests yield a good supply of timber. Mining is gradually turning the country from an agric. to an industrial one. The chief centre of the mining dist. is the Harz Mts. Coal, iron, lead, and copper are in normal times produced in great quantities, as are also marble, alabaster, and salt. The constitution of 1922-23 set up a Diet of forty-eight elected members, but under the Nazi regime the constitution was abolished, together with the Diet and popular gov. The state was then under a stadtholder or governor, who was the personal representative of the chancellor, Hitler. The pop. is 600,000, of whom 450,000 are Protestants.

History.—In the tenth century the lands which now form the state of B. were in the possession of the family of Brunos, whence the name B. is derived. They passed in the twelfth century into the hands of a member of the Welf family, Henry the Proud, and from him to his son, Henry the Lion. When Henry fell under the displeasure of both empire and papacy, he was allowed to keep his B.

lands, and in this way they passed into the hands of Otto, his grandson, who was made duke of B. and Lüneburg by Frederick II. Between the thirteenth and sixteenth centuries the duchy underwent a number of changes. It was divided first into the duchies of Lüneburg and B., and again the latter was continually a bone of contention and underwent a number of divs. until, in the sixteenth century, it was again united under Duke Julius, who not only reunited it, but added to it also. In the sixteenth century an important div. of the duchy of Lüneburg took place, and one of the divs. made then ultimately became the kingdom of Hanover. After this div. the duchy of B. was ruled in the direct line until the eighteenth century (1735), and again from that date until 1884. B. took an important part in the Franco-Prussian war, and became a state of the Ger. Empire in 1871. In 1884 the direct line of B. dukes failed, and the duchy should have passed to George duke of Cumberland, who had until just previously to that time been king of Hanover, but had been deposed by Prussia. Prussian influence was brought to bear, however, and a Prussian prince was elected to the duchy in 1885. In 1906 the Prussian regent d.; the claims of the duke of Cumberland were again overlooked, and Duke John Albert of Mecklenburg-Schwerin was chosen as regent. On May 21, 1913, Ernst August, son of the duke of Cumberland, married the kaiser's daughter, Victoria Louise, and took the oath of allegiance to his father-in-law. On Nov. 1, 1913, he ascended the throne, and reigned until Nov. 8, 1918, when the revolution forced him to abdicate and an extremist Socialist gov. was formed. After various changes a moderate Socialist gov. was returned in 1927, but this gave way in 1933 to the Nazi regime. In the allied invasion of Germany in the Second World War B. was overrun by Amer. forces in March-April, 1945. See WESTERN FRONT IN SECOND WORLD WAR.

Brunswick, New, see NEW BRUNSWICK.
Brunswick, Friedrich Wilhelm, Duke of (1771-1815), Prussian general. Being deposed from his duchy by the treaty of Tilsit in 1807, he took up arms against France, whose sworn enemy he became. He fought in the Austrian campaign of 1809, and, refusing to lay down his arms on the conclusion of peace, went with his troops to England and put himself at the service of the Brit. Gov., in whose pay he fought in Portugal and Spain. He was reinstated in his sovereign rights in 1815, but was killed at Quatre-Bras.

Brunswick, Karl Wilhelm Ferdinand, Duke of (1735-1806), Prussian soldier, married Augusta, a sister of George III., and served in sev. campaigns. In 1780 he became duke on his father's death, and in 1792 he led the Austrian and Prussian Army that was so signally defeated by the Fr. at Valmy. He held a high command in the allied armies until, commanding the Prussians, he was wounded

at Auerstadt. D. of his wounds Nov. 10. His son, Friedrich Wilhelm (q.v.), commanded the Brunswick troops at Quatre-Bras.

Brunswick Black, composition of lamp black (q.v.) and turpentine, or of asphaltum, rosin, and turpentine, used for giving a jet-black appearance to iron articles.

Brunswick Green, light green pigment. The term is applied to: (1) Oxochloride of copper, prepared by the action of sal ammoniac on copper filings, or by boiling copper sulphate with a small quantity of bleaching powder; (2) carbonate of copper; (3) a mixture of Prussian blue, or indigo, with chrome yellow, a small quantity of gypsum being added.

Brunton, Sir Thomas Lauder (1844-1916), Scottish physician, b. in Roxburghshire. He was educated at Edinburgh Univ. In 1870 he was lecturer in materia medica and pharmacology at Middlesex Hospital; in 1871 he occupied a similar post at St. Bartholomew's Hospital; 1874, assistant physician there; 1895, physician; resigned in 1905, and became consulting physician at the same hospital. In 1886 he was a member of a commission to report on the treatment of hydrophobia, and he went to Paris to study Pasteur's system. He made a special study of the action of drugs and their application in disease. Prin works: *Pharmacology and Therapeutics* (1880); *The Bible and Science* (1881); *Disorders of Digestion* (1886); *A Textbook of Pharmacology, Therapeutics, and Materia Medica*, 3rd ed. (1893); *Collected Papers on the Circulation and Respiration* (1906).

Brusa, city of Asiatic Turkey. It is situated close to the base of Mt. Olympus in a well-wooded, fertile valley. There are hot iron and sulphur springs in the neighbourhood. In 1855 a terrible earthquake occurred which disfigured the tn. very greatly. B. is especially noted for the manuf. of carpets, tapestry, silk fabrics, gauze, and satins, and the demand for these is considerable in E. countries, though the people of Switzerland make many imitations in cotton. Wine is another production. Pop. 65,000.

Brusaporci, see **RICCIO**, DOMENICO.

Brush, Charles Francis (1849-1929), Amer. electrician and inventor, b. in Ohio and educated at Michigan Univ. Invented the Brush dynamo and Brush electric arc-light (1878). He also perfected the 'Series' arc-lamps. Founded the Brush Electrical Company in Cleveland.

Brushes, instruments used for removing dust or dirt from the surface of anything, and also for applying paint or some similar substance to a surface. The instrument, when made of long twigs, usually of birch, is called a broom, a name which is equally applied to the instruments which are used for household purposes, such as a carpet broom. The materials generally used for the manuf. of B. consist of either the hair of various animals or vegetable fibre. B. made of

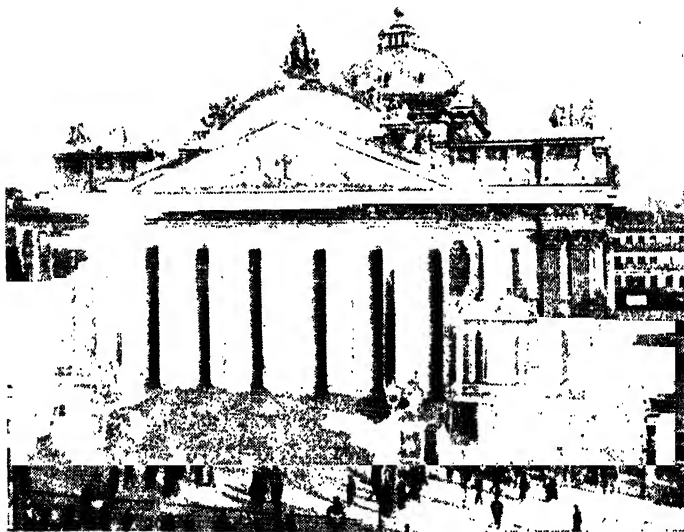
steel wire are used nowadays for a variety of purposes, such, for example, as cleaning the inside of a boiler, or for cleaning tubes. B. may be divided into two classes, compound and simple. The latter kind of brush is best exemplified in the hair pencils of artists, and is made of one single tuft of hair. They are usually bound with quills. The compound B. can again be divided into two, 'set' B. and 'drawn' B. Of the former the best example is the ordinary house-brush, and of the latter the hair-brush. The cheaper kinds of fibre-made B. are usually made by machinery; one of the best brush-making machines being patented in America in 1870—the Woodbury machine. Revolving B. and various other contrivances of this description have been used frequently for the cleaning of the streets, and as early as the end of the seventeenth century one of these machines was in use in London. The means by which in a dynamo the current is conducted into a rotating armature is called a brush.

Brush Turkey, or *Talegalla Lathamii*, is a species of the family Megapodidae, or mound-birds, found in Australia. The birds lay their eggs in mounds of sand, and the mature bird is about the size of a turkey, brownish-black in colour.

Brussels, cap. of Belgium and of the prov. of Brabant, situated nearly in the centre of the kingdom in lat. 50° 51' N., 4° 21' E. long. It is built partly in the valley of the R. Senne and partly on the surrounding hills. Its climate is healthy, but it is variable and usually humid. As the most important tn. in the kingdom, it is the centre of legislation, education, and of artistic life. It contains the royal seat, the chief courts, and the chamber of commerce. It is the centre of the prin. banks of the country and contains the mint. It is also a most important industrial centre for all kinds of manufs. Its lace is still considered the best in Europe. B. is connected with Antwerp by a ship canal to the R. Rupel, trib. of the Scheldt. It is a junction of sev. international rail and airways. The pop. of the city of B. was 187,000 at the end of 1946 and estimated to be 940,000, including the seventeen suburbs: Anderlecht, Audergem, Etterbeek, Evere, Forest, Ganshoren, Ixelles, Jette, Koekelberg, Molenbeek St. Jean, St. Gilles, St. Josse-ten-Noode, Schaerbeek, Uccle, Watermael-Boitsfort, Woluwe St. Lambert, and Woluwe St. Pierre. It can with justice be said to be one of the finest cities in Europe. The boulevards which surround the city proper owe their origin to Napoleon. The upper tn., traversed by the rue Royale and the rue de la Régence leading to the Palais de Justice, is the best residential quarter. B. is one of the most modern tn.s. in Europe and in many respects it compares favourably with Paris. Amongst its many buildings may be mentioned the king's palace, which occupies the site of the old palace, burnt down in 1731, and has been much improved of late years. The whole city

is known for the beauty and antiquity of its buildings and for the magnificence of its squares and avenues. The Grand Place is one of the finest and most interesting of all the squares in Europe, both from the interesting historical events which have taken place there and from the beauty of the surrounding buildings. In this square are to be found the hôtel de ville and the Maison du Roi. Other medieval buildings are the churches of St. Gudule, Notre-Dame des Victoires, and Notre-Dame de la Chapelle. A number of these buildings contain very fine

of Belgium. On Aug. 20, 1914, the Ger. Army made a triumphal entry into unfortified B. The main body marched on to Mons and Charleroi on the road to Paris. On Sept. 2, Marshal von der Goltz was appointed governor-general of Belgium, and made his headquarters in B. The Belgian troops retreated from Antwerp in Oct. to a few miles from the Fr. frontier and for four years, except for news dropped from aeroplanes, the people of B. had only Ger. announcements of defeats and retreats of the Allies, but they refused to lose hope and M. Max,



D. McLeish

BRUSSELS: THE BOURSE

interior decorations. B. was probably a military camp during Rom. times, and is first mentioned by a name resembling B. In the eighth century. In the tenth century it is mentioned by the Emperor Otho, and in the course of time it became the centre of the gov. The dukes of Brabant for some considerable time dwelt in it, building their castle on the site of the present royal palace. This palace afterwards became famous as the palace of the Netherlands, and witnessed the abdication of the Emperor Charles V. During the war of the Protestant Succession it was bombarded by the Fr. general Villeroi, and great damage was done to it, a number of churches and 400 houses being destroyed by red-hot shot. Also a number of interesting buildings perished at this time. During the Fr. Revolution the republic was proclaimed here, and after the revolution of 1830 it became the cap.

their burgomaster, was so indomitable that he was banished to Germany, and another patriot, M. Lemonnier, took his place. In 1915, von der Goltz was succeeded by the Ger. gen. von Bissing (q.v.). On Nov. 22, 1918, the citizens welcomed home King Albert and Queen Elizabeth, who had never left the remaining unconquered strip of their country. In the great hall of the Royal Museum of the Army are preserved many relics of the war, but the *Tir National*, the shooting range just outside the city, with four posts marking the spot where thirty-five civilians were shot for defying the Ger. invaders, is a greater stimulus to Belgian patriotism. There is also a monument near the Avenue Longchamp to the Brit. Nurse Cavell (q.v.), who was shot for helping Brit. prisoners to escape. In 1923 the Brit. monument commemorating the brotherhood of the Brit. and Belgian

nations, a replica of that on the Victoria Embankment, was unveiled at B.

In the Second World War B. was occupied by the Gers. from May 17, 1940, until liberated by Gen. Dempsey's Second (Brit.) Army on Sept. 3, 1944. On one or more occasions in 1940 the Gers. deliberately bombed B. by night and laid the blame on the Brit., but the ruse was soon exposed. Once again the *Tir National* was the scene of brutal executions, some 400 patriots being shot and buried by the Gers. The univ. was closed on Aug. 18, 1942, because of the hostility of the profs. to Germany's 'New Order' (q.v.). As a final act of cruelty the Gers., on the eve of their retreat, set fire to the Palais de Justice, and the lofty cupola, which dominated the whole city, was completely burnt out. The Belgian Cabinet returned from London to B. on Sept. 8, 1944. See A. Henne and A. Wauters, *Histoire de la ville de Bruxelles*, 1843-45; J. Fayard, *Bruxelles*, 1928.

Brussels Conferences. A number of international conferences have been held in Brussels. In 1874 a society for improving the condition of prisoners of war sent circulars to the great powers. Russia issued a programme of seventy-one articles, embracing all the 'usages of war,' to be discussed at the conference. Great Britain declined the discussion of international law, sending Gen. Horsford as delegate without active powers and reserving liberty of action. The congress opened in July, the Russian Baron Jomini being president. U.S.A. were not represented; the sittings were secret, and no important results followed. In 1876 King Leopold summoned representatives (quite unofficial) of the great powers to decide on the best way of exploring and opening up Africa to European trade and civilisation. The outcome was the creation of the Congo Free State. In 1899-1900 the anti-slavery conference met at Brussels for the purpose of suppressing the slave trade in Africa. In 1901 an international conference on sugar bounties was held here and a convention signed by the chief European powers, by which the signatories undertook to prohibit the importation of sugar from any country that refused to abolish the bounties. Britain withdrew from this convention in 1913 and, later, the growing of sugar beet in Great Britain was assisted by a bounty, which is still paid. Since the First World War Brussels has somewhat lost its old position as the *renue* of international conferences in favour of The Hague or various Swiss towns. The reason for this is that Belgium lost her aspect of neutrality, being as she was one of the Allies. Perhaps the most important post-war conference held in B. was that in 1920, when the financial experts of the Allies met there, prior to the Spa Conference, in the endeavour to fix the total of reparations to be paid by Germany. See H. Whenton, *International Law*, 1904. See also BRUSSELS TREATY.

Brussels Sprouts. *Brassica gemmifera*, is a variety of *B. oleracea*, the cabbage, cruciferous plant. The main stem of

the plant bears numerous lateral leaf-buds in the axils of the leaves, each bud a kind of pygmy cabbage. The sprouts are succulent, and are eaten as a vegetable, coming into season in the autumn.

'Brussels,' ship belonging to the then Great E. Railway Company, conveying passengers between Harwich and Rotterdam in July 1916, which was captured by the Gers. and the captain shot on a charge of having attempted to ram a Ger. submarine. The *B.* was sold to Mr. T. B. Stott, a Liverpool shipowner, at the Baltic Exchange, for £3100, on Aug. 19, 1920. See FRYATT, CAPT.

Brussels Treaty (1948), fifty-year treaty of collective military aid and economic and social co-operation signed by Great Britain, France, Belgium, the Netherlands, and Luxembourg, at Brussels on March 17, 1948. It gave concrete form to the policy of a W. Union as formulated in outline by Mr. Ernest Bevin, Brit. foreign secretary, following the failure of the four major allies to agree upon the terms of the Ger. peace treaty and when the menace of Russian Communism called for solidarity among the nations of W. Europe. Aimed, however, against no individual nation, it is no ordinary treaty but is one which is designed to defend and to enrich the W. way of life, though, no doubt, as contrasted with existence in a totalitarian single-party or police state. Nothing like the treaty was seen after the First World War; but to-day the tide of policy runs strongly against the old traditions of neutrality and isolation which then prevailed and the pact is an admission of the gravity with which the signatories regarded the shaken ramparts of European security so soon after the defeat of Germany in 1945 had seemed to offer a measure of harmony in a world of democratic nations. By the economic clauses of the treaty the parties undertake so to organise and co-ordinate their economic activities as to produce the best possible results by the elimination of conflict in their economic policies, the co-ordination of production, and the development of commercial exchanges. A consultative council provides the instrument by which these aims may be realised. Article IV., which is based on Article 51 of the Charter of the United Nations (q.v.), is the core of the treaty. It carries the assurance of automatic assistance to any one of the contracting parties which becomes the object of armed attack in Europe. Each of the signatories undertakes to give assistance to any one of its partners without waiting for agreement on a joint plan of action. Nor is the undertaking limited to attacks on the ter. of the five nations; the words 'in Europe' may be taken to include an attack upon allied interests anywhere on the Continent. Outside Europe there is no automatic obligation. Article VII. provides that the consultative council may be convened 'in case of the renewal by Germany of an aggressive policy; with regard to any situation which may constitute a threat to peace in whatever area this threat should arise; or with

regard to any situation constituting a danger to economic stability.'

Brussilov, Alexei Alexeievich (1853-1926), famous Russian general of the First World War period, whose victories at a critical time in the fortunes of the Allies gave illusory promise of the permanent restoration of Russian military prestige. In the Galician campaign of 1914 his army took Tarnopol and Halicz, and, in triumph, entered Lemberg, which was promptly renamed Lvov (now Lwów). In 1915 he temporarily checked Gen. von Linsingen, who, in conjunction with Gen. von Mackensen, was making a formidable Austro-Ger. advance through the Carpathians. In 1916 he succeeded Gen. Ivanov in supreme command of the Russian S. Army group, comprising over a million men; with these, in June 1916, he launched a spectacular offensive simultaneously along a 250-m. front extending from the R. Pripiet to the Sereth, and by the end of that month the greater part of Bukovina had fallen to him, together with other appreciable gains westward of the Dniester and Stry. But owing to lack of shells and to worn-out guns, the advance melted away towards mid-Aug., after he had captured over 300,000 prisoners, together with 400 guns and some 1200 machine-guns. The purpose of this great drive, which was coincident with Gen. Cadorna's (q.v.) advance on the Trentino, was to distract the energies of the Central Empires from the Fr. and Flemish front. It undoubtedly put fresh heart into the allied armies and paved the way for the Somme offensive of July 1916. When the Russian revolution broke out in the following year, B.'s army, together with that of the other leading Russian general, Russzky, declared for the revolution, and B. himself, with other prominent Russian generals, advised the weak tsar, Nicholas, to abdicate. When, later, on Kerensky's (q.v.) rise to power as war minister, a supreme effort was organised to prepare the Russian armies for resistance to the Ger. offensive, B. succeeded Alexeiev (q.v.) as generalissimo of the Central Army group. He decided to launch an attack against Bochn-Emnolli (q.v.) in June-July 1917, with Halicz, Stry, and Brzezany as his immediate objectives and Lemberg (Lvov) as his goal. But after he had taken Halicz once again, together with 80,000 prisoners, the Russian armies had shot their bolt, and their demoralisation in retreat was complete. Soon afterwards Kornilov (q.v.) succeeded B. in the nominal command of the disorganised Russian armies, and with the progress of the revolution his services came to an end. Owing to the annihilating effect of the revolution on most things appertaining to tsarist Russia, but little is known of B.'s private life beyond the fact that, unlike his rival Alexeiev, he came of an old-established family.

Brut, or **Brutus the Trojan**, hero of Brit. legend. According to Geoffrey of Monmouth, the hero who gave his name to Britain. This story is also related by the Anglo-Norman, Geoffrey Gaimar, who

based his rhymed chronicle, *Estorie des Bretons* (not extant) on the version of Brit. hist. put forth by Geoffrey of Monmouth; by Geoffrey Wace; and by Layamon. Wace's *Brut d'Angleterre* (1155) is a liberal paraphrase of Geoffrey of Monmouth's work and soon eclipsed Gaimar's metrical chronicle. Wace did not, however, add much of any consequence to Monmouth's hist., though he does speak of the round table, a subject not mentioned by Geoffrey of Monmouth. Layamon, whose *Brut* (early thirteenth century) is an expansion of Wace's hist. or romance of chivalry, surpasses Wace in realism and fire even more than Wace surpasses Geoffrey of Monmouth. B. is supposed to have been the grandson of the 'pious Aeneas'; he was banished from Italy, and after many adventures reached Britain. He is supposed to have founded a new city of Troy (Troynovant), which was erected on the present site of London.

Bruté, Simon William Gabriel (1779-1839), Amer. prelate and first Rom. Catholic bishop of the diocese of Vincennes, Indiana, U.S.A., was b. at Rennes, France. In 1810 he settled in Baltimore, Maryland, whither his interest in missions and his acquaintance with Bishop Flagnet of Kentucky had drawn him. He held an unrivalled place in the Amer. Church from 1818 to 1834, being constantly consulted by the clergy, and frequently lecturing and teaching. Characteristic stories are narrated of the high respect in which he was held by the Indians, who called him the 'Chief of the Black Robes.' Consult J. R. Bailey, *Memoirs of the Rt. Rev. S. W. G. Bruté* (New York), 1861.

Bruton, picturesquely situated mkt. tn. in Somerset, formerly the seat of a priory. Pop. 1800.

Brutus, Decimus Junius (84-43 B.C.), served first under Caesar, in Gaul, who afterwards made him commander of his fleet. Later he was made master of the horse and governor of Gaul, and Caesar, who held him in much esteem, made him his heir, in the event of Octavian's death. But in spite of this, he was one of the conspirators in the plot against his benefactor, and was one of the first, with his relative Marcus, who helped in the assassination. Afterwards he fought against Antony, and after having led the republican armies against him, and defeated him for some time, he was finally deserted by his own soldiers, and fell into the hands of Antony, who put him to death.

Brutus, Lucius Junius, was one of the first two consuls, 509 B.C. He was nephew of Tarquinius Superbus, the last of the Rom. kings. His father and brother were both murdered by members of their own family, who wished to acquire for themselves the wealth of their relatives. Junius escaped with his life, which circumstance he owed to his apparent dullness of mind, but there is no doubt that this dullness was only assumed. He was known as the 'avenger of women's honour,' on account of having expelled Sextus Tarquinius from Rome, for his outrage on Lucretia, wife of Collatinus.

In an attempt to restore Tarquinius to his throne, in a battle in which Junius and Aruns, son of the deposed king, were engaged, they killed one another.

Brutus, Marcus Junius (79-42 B.C.), one of the murderers of Julius Caesar, and a governor of Cisalpine Gaul; lost his father when he was only eight years old, and was trained by his uncle, Cato, in the principles of the aristocratical party. During the early part of his manhood he practised as an advocate. His mother, Servilia, was half-sister of Cato of Utica. On the outbreak of civil war (49) he joined Pompey, despite the fact that it was at the latter's order that the elder Brutus had been slain. After the battle of Pharsalia (48) Caesar pardoned him, and made him governor of Cisalpine Gaul in 46, praetor in 44, and promised him the governorship of Macedonia. But notwithstanding the many obligations he was under to Caesar he was persuaded by his friend, Gaius Cassius, to murder his benefactor under the delusive idea of again establishing the republic. After the murder of Caesar B. seized Macedonia, and having joined forces with Cassius, who was then commanding in Syria, the two opposed their united forces to the armies of Octavian and Antony. Two battles were fought near Philippi (42), B. being victor in the first, but in the second battle he was defeated, and so took his own life. During his short life he was an earnest student of literature and philosophy, but appears to have been deficient in judgment and original power, this being the character given to him by Shakespeare (see *Julius Caesar*). He wrote some philosophical treatises and some poetry, but nothing whatever of these has come down to us. His only extant writings consist of portions of his correspondence with Cicero, which have been proved beyond dispute to be his.

Brun, Malte Conrad, see **MALTE-BRUN**.
Brüx (Czech Most), tn. Czechoslovakia, with 23,000 (1938) inh., of whom 17,000 were Gers. It has the ruins of a castle and a late Gothic church (1517), and is the centre of a coal-field; it suffered severely in the Thirty Years war.

Bruxelles, see **BRUSSELS**.

Bruyère, Jean de La, see **LA BRUYÈRE**.
Bruyn, Brun, or Bruin, Cornelius (1652-1719), Dutch painter and traveller, b. at The Hague. He studied painting in Rome and Venice, and visited Asia Minor, Egypt, Russia, and Persia. From the drawings made during his travels he obtained sufficient data to publish two profusely illustrated vols. of his journeys, the prin. value of which lies in the beauty of the plates.

Bry, or Brie, Theodorus (Dirk) de (1528-1598), Ger. publisher and engraver, b. at Liège. He set up as a printseller and bookseller at Frankfurt, and it is supposed that his career as an engraver began rather late. He executed many fine etchings and engravings for various books, including a voluminous *Collections Pergrinationum in Indiam Orientalem et Indiam Occidentalem* (*Collections of Travels to the East and West Indies*), in

gathering which he was assisted by Hakluyt. But he excelled chiefly in processions; of these there are still in existence 'The Wise and Foolish Virgins,' a set consisting of ten plates; 'The Muses,' in nine plates; a 'Dance of Peasants'; 'Dance of Lords and Ladies'; 'Pride, Avarice, Folly, Prudence, and Charity' (grotesque personifications), etc. That B. lived for a time in London is attested by the existence of two extremely rare sets of plates executed by him there; these are a 'Procession of the Knights of the Garter,' a set consisting of twelve parts, and 'Sir Philip Sidney's Funeral Cortège.' B. signed his work sometimes with his initials, sometimes with a monogram, and at other times with 'Toreumias Brilanceus.'

Brya is a genus of leguminous plants found in Central America and the W. Indies. *B. Ebenus* is noted for its wood, known as Jamaica ebony or cocus-wood.

Bryan, city in Brazos co., Texas, U.S.A. The Agric. and Mechanical College of Texas is 5 m. away. Pop. 7000.

Bryan, William Jennings (1860-1925), one of the most celebrated of modern Amer. politicians, was b. at Salem, Illinois, March 19; educated at Illinois College and Union College of Law, Chicago. Practised law in Jacksonville, Illinois, till 1887, and later in Lincoln, Nebraska. In 1891 he was elected to Congress from the First Dist. of Nebraska, which had always been Republican, but the Democrat B. carried it on the strength of his 'free silver' speeches. He served two terms in Congress, and took a leading part in the debates on the questions of bimetalism (*q.v.*) and free trade. From 1894 to 1896 he ed. the *Omaha World*, where he still further preached the free silver doctrine. When the presidential convention of the Democratic party met in Chicago in 1896, it was known that the issue would be joined between the gold standard Democrats of the E. and the free silver forces of the W. and S. B. went to the convention as a simple delegate from the state of Nebraska. While the old experienced politicians were trying to agree on a presidential nominee, B. upset all their plans and changed the currents of Amer. political hist. by making one of the greatest speeches of his career. Of commanding stature, handsome face, coal-black hair, with a fine voice, capable of making itself heard in even the largest assembly, a natural-born orator and at that time only thirty-six years of age, he swept the convention off its feet by a speech for free silver in which he used his famous phrase: 'You shall not crucify mankind on a cross of gold!' B. was nominated for the presidency on a free silver plank. The Republicans promptly nominated Wm. McKinley on a gold standard. There ensued one of the most exciting campaigns in the hist. of the country. But, though B. had carried states like Colorado and Washington, that had always been considered safely Republican, McKinley secured 271 electoral votes to 176 for B. Undismayed by the defeat of 1896, the Democrats renominated

him for president against McKinley in 1900. This time he coupled with free silver a bitter crusade against imperialism growing out of the U.S.A. having annexed the Philippines, Guam, and Puerto Rico as a result of the victories in the war with Spain. B. once more went down to crushing defeat. In 1904 he was not a candidate, and the gold Democrats nominated Judge A. B. Parker, who was badly beaten by Roosevelt. But once more in 1908 the Democrats nominated B. and once more B. lost. When Woodrow Wilson was elected president, he named B. as secretary of state, the greatest office within his gift. B. held office until June 1915, when he resigned because of the firm attitude the President took after the Gers. sank the *Lusitania*. During his term in office, B. brought about the negotiation of thirty treaties of arbitration with as many nations. B. again achieved nation-wide prominence in the famous trial of the Dayton, Tennessee, teacher Scopes, for teaching his pupils the Darwinian theory. B. became one of the counsel of the prosecution, and stood for the literal truth and inspiration of every word of the Bible as against the scientists. He thus became known as a 'Fundamentalist.' He made a large sum of money out of his weekly newspaper *The Commoner*, which he founded in 1900. He also pub. various books, among them *The First Battle* (1896); *The Old World and its Ways* (1907); *Speeches* (1913).

Bryanites, see METHODISM.

Bryansk, see BRIANSK.

Bryant, Sophia (1850-1922), Eng. school-mistress, daughter of Dr. Willecock, Irish national educationist. Widowed soon after marriage, she pursued her studies, and in 1884 received the doctorate of science in the univ. of London, being the first woman to achieve the distinction. After being mathematical mistress at the N. London Collegiate School, she succeeded the well-known Miss Buss in 1895 as its head mistress. She also served on the Royal Commission on Secondary Education, 1894. Litt.D., Dublin, 1904. Killed while mt. climbing in the Alps.

Bryant, William Cullen (1794-1878), Amer. poet and journalist, b. at Cummington, Massachusetts, admitted to the Bar in 1815; practised law in Plainfield, Massachusetts, and later in Great Barrington. During this time he gained a reputation as a poet, and in 1821 delivered *The Ages* as the Phi Beta Kappa poem at Harvard. In 1825 he removed to New York, and became editor of the *New York Review*, and in 1828 took up the editorship of the *New York Evening Post*, in which position he remained till his death. His journalistic work, mainly concerned with the anti-slavery movement, is marked by simplicity and vigour of style, together with common sense and breadth of view. He is best known, however, as a poet, and issued sev. vols. of collected poems. Among his most famous verses are: *Thanatopsis*, *To a Waterfowl*, *The Death of the Flowers*, *My Country's Call*, *The Battlefield*, and *The Flood of Years*. He also pub. *Letters of a Traveller*

(1850); *Letters from Spain and Other Countries* (1859); *Letters from the East* (1869); *Oration and Addresses* (1873); and metrical versions of the *Iliad* and the *Odyssey* (1870-72). See Parke Godwin (ed.), *Life and Works*, 1883-84.

Bryaxis is a genus of Coleoptera of the family Psephenidae. They are tiny beetles with very short elytra, which cover only half the abdomen, and they are found in moss occasionally, but usually in ants' nests.

Bryce, David (1803-76), Scottish architect, of Edinburgh. He designed many public offices in different styles, among them Fettes College, Edinburgh Royal Infirmary, Bank of Scotland, the Sheriff Court, Lanark Infirmary, and many churches. B. was a specialist in the form of Gothic architecture known as Scottish baronial. Among mansions, additions, and alterations by B. may be mentioned Panmure for earl of Dalhousie; mausoleum for duke of Hamilton; Kinraid Castle for earl of Southesk.

Bryce, George (1844-1931), Canadian clergyman and educator, b. at Mt. Pleasant, Brantford, Ontario, 1844. Graduated at univ. of Toronto, 1867. Ordained to Presbyterian ministry, 1871. He founded Manitoba College, was prin. there, 1877-1909. Also founder of the Knox Church, Winnipeg, 1872, and assisted in foundation of Manitoba Univ., 1877. Moderator of Presbyterian General Assembly of Canada, 1902; president of Royal Society of Canada, 1909-10. B.'s works include: *Manitoba: Infancy, Growth, and Present Condition* (1882); *John Black, the Apostle of Red River* (1898); *The Remarkable History of the Hudson's Bay Company*, 1900 (3rd ed., 1910); *MacKenzie, Selkirk, and Simpson in Makers of Canada*, 1905 (new ed. 1926); *Romantic Settlement of Lord Selkirk's Colonists* (1909); *Short History of the Canadian People* (1910); and *Canada and the Northwest* (1912). Collaborated with W. W. Campbell in *The Scot in Canada* (1911).

Bryce, James, Viscount, of Dechmont, co. Lanark (1838-1922), Brit. statesman and writer; b. in Arthur Street, Belfast, May 10. His family moved to Glasgow in 1846, and B. studied at Glasgow and Oxford. In 1862 he pub. a monograph, *The Holy Roman Empire*, an enlarged form of his Arnold prize essay, which gained him an immediate reputation as a historical writer. In 1867 he became a barrister at Lincoln's Inn, and in 1870 was appointed regius prof. of civil law at Oxford. He entered Parliament in 1880 as Liberal member for the Tower Hamlets, and rapidly became prominent among the followers of Mr. Gladstone. In 1885 he was returned for S. Aberdeen, and in 1886 became under-secretary for foreign affairs under Lord Rosebery. In 1889 he married Elizabeth Marion, daughter of Thomas Ashton of Disbury. During Mr. Gladstone's next ministry, B. became chancellor of the duchy of Lancaster, with a seat in the Cabinet, in 1892; and in 1894 succeeded Mr. A. J. Mundella as president of the Board of Trade in Lord Rosebery's administration.

In 1895 he originated the scheme for the construction of light railways which was carried into law by his successor, Mr. Ritchie. He was an original fellow of the Brit. Academy, founded 1902, and chairman of its historical and archaeological committee. In 1905 he was appointed chief secretary for Ireland, and in 1907 succeeded Sir Mortimer Durand as Brit. ambas. to the U.S.A., which position he resigned Nov. 11, 1912. He was made a viscount in 1914. Soon after the outbreak of war, B. was induced by Mr. Asquith to preside over a committee of jurists appointed to inquire into alleged Ger. outrages in Belgium; and the moderate expression of that committee's findings gave them great weight, especially in America. In July 1921 he revisited the U.S.A., lecturing on international relations. As a politician, he was conspicuous in his advocacy of Home Rule for Ireland, the abolition of univ. tests, international copyright, and revision of the statute law. His first pub. book appears to have been *Flora of the Isle of Arran* (1859). He also wrote *The American Commonwealth*, now a classic, 1888 (new ed. 1910); *Two Centuries of Irish History* (1888); *Transcaucasia and Ararat* (1896); *Impressions of South Africa* (1897); *Studies in History and Jurisprudence* (1901); *Studies in Contemporary Biography* (1903); and *Modern Democracies* (1921). B. was an old-fashioned Liberal. With scholarship and experience enough to justify the widest generalising, he seemed, to the newer school, to halt amid a multitude of opinions. He appreciated the reasonableness of Utilitarianism, but leaned to the more poetic doctrine of Natural Right. He d. at Sidmouth, Jan. 22, 1922.

Brydges, James and John, see CHANDOS.
Brydges, Sir Samuel Egerton (1762-1837), bibliographer and genealogist, was b. in Kent. He was educated at Maidstone, Canterbury, and Cambridge. In 1787 he became a barrister, but five years later he left his profession, preferring a quiet country life in Kent. His bibliographical works include *Censura Literaria, containing Titles, Abstracts, and Opinions of Old English Books*, 10 vols. (1805-9); *British Bibliographer*, 4 vols. (1810-14); *Restituta, or Titles, Extracts, and Characters of Old Books in English Literature revived*, 4 vols. (1814-16). His other works were eds. of E. Phillips's *Theatrum Poetarum Anglicanorum* (1800), Collins's *Peerage* (1812), and of many rare Elizabethan authors. In 1808 he was made a knight of the Swedish order of St. Joachim. From 1812 to 1818 he sat for Maidstone, and afterwards lived abroad until he died.

Brylov, Constantin Karl Pavlovitch, see BRULOV.

Brynmawr, Douglas (1823-1903), Canadian journalist and archivist, b. in Scotland. Entered on a mercantile career till 1856, emigrated to Canada, 1857, first taking up farming, afterwards journalism. He became editor of the *Preshiterian*, and associate editor of Montreal *Daily Herald*. B. was appointed historical archivist of

Canada, 1872, holding office for thirty-one years. He issued a number of vols. with abstracts from the valuable MSS. stored in the Canadian archives. These were brought out yearly, each being called *Report on the Canadian Archives*. See *Dominion Archives*, from 1872.

Bryniolf, Bishop (1605-75), an Icelandic divine, bishop of Skalholt, 1639-75. He made a most valuable collection of old Icelandic MSS. Of these he sent many by the traveller, Thormod Torvesen, to the king's library at Copenhagen. A number of the remainder unfortunately perished after his death. See G. Vigfusson and F. Y. Powell, *Corpus Poeticum Boreale*, 1883.

Brynmawr, mrlt. and mining tn. in Brecknockshire, S. Wales, 14 m. from Brecknock. Pop. 8000.

Bryology (Gk. *βρύον*, moss, *λόγος*, speech) is that part of the science of botany which treats of mosses (q.v.) and liverworts, these two groups of plants together constituting the phylum *Bryophyta*.

Bryonia (Bryony) is an Old-World genus of Cucurbitaceae, which is represented in Britain by *B. dioica*, the white bryony of our hedges. The root was formerly much used in rural pharmacy, and the flowers are the sole source of food of the bees of the species *Andrena florea*. The black bryony (*Tamus communis*), another common hedge plant, belongs to an entirely different family, and is poisonous. See TAMUS.

Bryonin is an amorphous, bitter substance which can be extracted by boiling water from the root of *Bryonia dioica*. It is a yellowish-white substance, sometimes tinted with red or brown. It is a drastic purgative, and poisonous in large doses.

Bryophyllum, succulent genus of Crassulaceae, is common to S. Africa and Madagascar. It is remarkable for the



LEAF OF BRYOPHYLLUM

The leaf when separated from the plant forms buds in the notches. 1, roots of young plant; 2, young plant; 3, leaf.

adventitious buds which occur on the margins of the leaves. *B. calycinum* is cultivated in Brit. hot-houses, and *B. proliferum* is another common species.

Bryophyta (Gk. *bryon*, mossy seaweed; *phyton*, plant), phylum or group of plants which has been represented by a moss, *Funaria*, but it also includes the liverworts, in which the plant body is a thallus. As in the Pteridophyta (ferns,

horsetails, and club-mosses), the sexual organs consist of archegonia and antheridia, and consequently the two groups are often united as the Archegoniatae. The antheridia are generally stalked ovoid or globular structures producing a large number of biciliate sperms, whilst the archegonia do not differ essentially from those of the Pteridophyta. Both mosses and liverworts, however, are distinguished from the Thallophyta by showing alternation of generations. The most conspicuous stage in their life-history, either the leafy plant of a moss or the green leaf-like thallus of a liverwort, is the gametophyte generation, while the sporogonium is the sporophyte generation which remains attached to the gametophyte, and is to a large extent dependent upon it. All the B. are very simple in their form and structure, even when they show differentiation into stems and leaves.

Bryozoa is a term applied by Ehrenberg to a phylum of animals, from their moss-like appearance. Though still known by his name, they are usually referred to as the Polyzoa (*q.v.*). The majority are marine, but some occur in fresh water.

Bryum, genus of mosses, belongs to the order Bryinea and family Bryaceae. The species are exceedingly numerous, and are found in great abundance in Great Britain. Among these are *B. lacustre*, *B. pendulum*, *B. cuspidatum*, and *B. arcticum*. *B. argenteum*, with silvery leaves, grows on waste ground, cinders, roofs, etc., and is common even in industrial districts.

Brzezany, tn. in Ukraine, 100 m. S.E. of Lwów (Lemberg), with 10,000 inhab., of whom 6000 were Jews (1938). Early in the First World War the Russians swept over it, but were driven back again beyond it in summer of 1915. In June 1917 it came within the Russian offensive movement against the Austrians and a great battle was fought round it. The movement was only partially successful owing to the arrival of Ger. reinforcements. In the partition of Poland between Germany and Russia in Sept. 1939, B. fell within the Russian portion. In the Second World War it was taken by the Gers. early in 1941, and recaptured by the Soviet troops in the fighting for Tarnopol in March 1944.

Bubalis, genus of the family of true antelopes. Their real home is in Africa, but one or two species are found in Asia. Among the chief representatives of the B. are the hartebeest of S. Africa, the bontebok of the S. interior, the sassaby of Cape Colony, the bubaline of the N. deserts, the blebok, and the gnu, or wild-beest. They are all large, rather ox-like, horned in both sexes, with long and more or less hairy tails, high withers, elongated heads, broad and naked snouts, tall, narrow, upper molars, two teats, and they are more or less uniformly coloured. One of this group is supposed to be the B. of ants., often represented on Egyptian monuments.

Bubastis, modern Tell Basta, was once the holy city of the Egyptian goddess Bast, or Pasht, whose sacred animal was

the cat. She was supposed to hold the same place in the Egyptian Pantheon as Artemis or Diana. Bast was the wife of Ptah, and the mother of Nefer Atum (Nefertem or Ipthimis). Her type is that of a goddess with a lion's head, and she was looked upon as the bringer of good luck. Later on the head of the lion was changed to that of a cat. The worship of the goddess was chiefly at B., and at the time of Kholak—near Christmas. The city was taken by the Persians in 352 B.C. and then it lost its importance. The ruins of its temple were discovered in 1887, together with many other antiquities.

Bubble-shell, see BULLA.

Bubble, South Sea, see SOUTH SEA BUBBLE.

Bubo (Gr. *bombōr*, the groin), swelling and inflammation of a lymphatic gland, particularly of the groin, and usually associated with gonorrhea, syphilis, or plague. The chief varieties are: (1) *Simple or sympathetic B.*, one caused by friction or mechanical irritation; this includes what was formerly called *primary B.*, believed to be due to syphilis before the formation of a chancre; (2) *syphilitic*, that which appears in syphilis; (3) *virulent*, an ulcerating variety due to the absorption of virus from a chancre; (4) *indolent*, one which consists of a swelling without discharge of pus; (5) *parotid*, inflammation of the lymphatic gland overlying the parotid (the salivary gland of the cheek); (6) *rheumatic*, a hard lump, usually on the back of the neck, following articular rheumatism.

Bubo is the Lat. term for a genus of owls of the Strigidae family. The species are characterised by a small earflap and two tufts or feathered horns on the head, while the legs are feathered to the toes. *B. ignavus* is the eagle-owl common to Europe, Asia, and Africa. See also EAGLE-OWL.

Bubonic Plague, disease carried by the rat flea. It was this disease which swept away over 29,000,000 persons in Europe in the Black Death of the fourteenth century. In the first decade of the present century 1,000,000 people died annually of B. P., but it has considerably decreased since then. See also PLAGUE.

Bucaramanga, tn. of Colombia on R. Lebrija. Centre of the coffee trade, has large mines of gold, copper, and iron close by. It has a coffee market. Wide streets, electric lighted. Hat and cigar factories. Railway communication with Magdalena. A sanguinary battle was fought near here between Conservatives and Liberals in 1900. Pop. over 30,000.

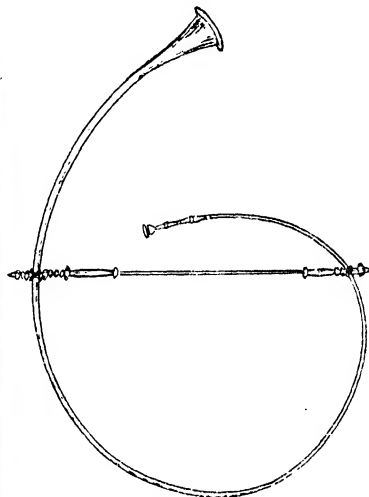
Bucarest, see BUCHAREST.

Buccaneers. Name applied to the bands of piratical adventurers, of various nationalities, who had their headquarters in the W. Indies during the seventeenth century. Their existence seems at first to have been an outcome of the semi-independent, semi-national expeditions against Spain of Drake, Hawkins, and Davis, for the early B. confined their operations to reprisals against Spain. In 1625 a band of Eng. and Fr. adventurers founded a settlement

on St. Christopher, from which they made cattle-hunting raids into Santo Domingo, drying the flesh and selling it to passing vessels. Their name of *boucanier* (Fr.) came from the Indian *boucan*, a term used of the apparatus on which the meat was cured. In 1630 they removed to Tortuga del Mar, a small is. in the Bahama Channel to the N.W. of Santo Domingo, which lay in the main route of trading vessels. They were joined by kindred spirits from all parts of the world, and for many years were a terror to Sp. ships and settlements on the neighbouring is. and mainland, the Sp. capture of the stronghold in 1836 having no permanent effect. Their early leaders included the Frenchman Monthars, known as 'The Exterminator,' L'Ollonais, and Peter the Great of Dieppe, the famous Welshman Henry Morgan, Michael de Busco, Bartolomeo el Portuguez, Mansvelt, and Van Horn. In 1654 they captured and sacked New Segovia, in Honduras, and later plundered Maracaibo and Gibraltar, on the gulf of Venezuela, and settled at Providence in the Bahamas. Their footing was still more firmly estab. in 1655 by the capture of Jamaica by the Brit., who lent them a kind of indirect support as fellow enemies of Spain. Operations from Jamaica were directed by Morgan, who seems to have possessed qualities of chivalry, valour, and brilliant generalship, as a set-off to his undoubted cruelty on many occasions. He was especially successful at the sack of Puerto Bello, but seems to have become too strong to please the Brit., as in 1670 a treaty to suppress buccaneering was concluded between Great Britain and Spain. Morgan's answer to this, in 1671, was to cross to the mainland with a fleet of thirty-nine vessels, and, after marching across the isthmus and fighting a pitched battle, to sack and burn Panama in circumstances of great barbarity. He later made terms with the Brit. Gov., was knighted by Charles II., and became deputy-governor of Jamaica. In 1680 the B. crossed the isthmus of Darien, and, under the command of John Coxon, took Santa Maria and some Sp. vessels in the bay of Panama. Then, while some returned to Jamaica, others, commanded by Sharp, Watling, and Hawkins, went through the S. Sea to Cape Horn, by which route they returned, laden with enormous wealth. In 1683 six vessels of the B., under Van Horn, sacked Vera Cruz, while another section, under John Cook, went to Cape Horn, were joined by a vessel sent out from England under Eaton, and ranged the Pacific for two years, commanded by Davis and Swann. In 1685 they returned to Panama, and were joined by two other parties, a Fr. one under Grognet and L'Escuyer, and an Eng. one under Townley. This was the height of their power, for with wealth and security jealousies arose and the Fr. and Eng. separated. In 1688 an Eng. party returned from plundering León and Realejo, in Nicaragua, and some of its members joined a Fr. expedition against Cartagena. When the war between England

and France broke out in 1689, however, the alliance came to an end, and the B. were harried by both countries. In 1697 an Eng. and Dutch fleet fought them off Cartagena, and after the peace of Ryswick in 1701 they gradually deteriorated into cut-throat desperadoes, without redeeming qualities. See W. Dampier, *Voyages*, 1697; J. Burney, *History of the Buccaneers of America*, 1816; J. Esquemeling, *Buccaneers of America*, 1678 (Eng. trans. 1741 and 1893); and the books on the subject by Wafer, Ringrove, Sharp, Thornburg, Archenholz, Stockton, Capt. Johnson, Pyle, and Haring.

Buccari, or **Bakar**, tn. of Yugoslavia on the gulf of Quanero. Tunny fishing is carried on. Pop. 2000.



BUCCINA

Buccina, Rom. military brass wind instrument of the shrill horn or cornet kind in use in anct. Rom. times. It was bent into the shape of the letter C, was about 12 ft. in length, of narrow cylindrical bore, and blown by means of a cup-shaped mouthpiece.

Buccinator (Lat. trumpeter), the thin flat muscle of the cheek, forming the lateral wall of the mouth. It is so called because that part is distended in blowing a trumpet. Its action is to retract the angle of the mouth, flatten the cheek, and bring it into contact with the teeth.

Buccino, It. tn. in Campania. Has a castle, old walls, and Rom. bridge. Quarries of fine marble near. Pop. 5000.

Buccinum, see WHEEL.

Buccleuch is a small glen in Selkirkshire, Scotland, about 18 m. S.W. of Selkirk.

Buccleuch Family. Anct. and distinguished Scottish ducal house, tracing its descent from Sir Richard le Scott

(1249-86), who was famous in the reign of Alexander III. of Scotland. The first of the family to receive the title of B. was Sir David Scott of Branzholm, who sat in James III.'s Edinburgh parliament of 1487 as 'Dominus de B.' The Sir Walter Scott of Branzholm and B., mentioned in Scott's *Lay of the Last Minstrel*, was his grandson, and lived about 1490-1552. He fought in the battle of Pinkie, 1547, and was killed in a skirmish with Sir Walter Kerr of Cessford, in Edinburgh. His great-grandson, bearing the same name, 1565-1611, was warden of the W. Marches, and was raised to the peerage in 1606 as Lord Scott of B. He is celebrated for his rescue of 'Kilmont Willie' from Carlisle Castle, as well as for his services in the Netherlands, and in organising border bands for foreign service. The title of earl of B. was bestowed in 1619 upon a Walter Scott who commanded a Netherland regiment against Spain. The first duke of B. was James, duke of Monmouth, the illegitimate son of Charles II., who received the title in 1663 on his marriage to Anne, countess of B. When he was beheaded in 1685 the duchess retained the title in her own right. She was succeeded in 1732 by her grandson, Francis, as second duke of B. Henry, third duke of B. and fifth duke of Queensberry (created 1684), 1746-1812, was a friend of Dr. Adam Smith, and rendered great social service to his tenantry by making numerous improvements on the estates. Walter Francis, fifth duke, 1806-84, was noted for the creation of the deep-water harbour at Granton, near Edinburgh, was lord-lieutenant of Midlothian and Roxburghshire, and captain of the queen's bodyguard in Scotland. The present (1948) holder of the title is the eighth duke of B. and tenth duke of Queensberry. He succeeded to the title in 1935. Lady Alice Montagu-Douglas-Scott (b. 1901), his sister, married the duke of Gloucester (Prince Henry), on Nov. 6, 1935. See Sir W. Fraser, *The Scotts of Buccleuch*, 1878.

Bucconinae, see PUFF-BIRDS.

Bucentaur was a figure representing half a man and half an ass or bull. It was probably used as a figure-head for a ship. It was also the name of the state ship in which the doge of Venice sailed every year on Ascension Day to the Adriatic Sea. He then performed the rite of dropping a ring into the water, wedding the sea in the name of the republic.

Bucephala, tn. on the R. Hydaspes, N. India. It was built near the grave of Bucephalus, who d. in the Indian campaign of Alexander.

Bucephalus, favourite horse of Alexander the Great. Alexander, when a young man, had proved to be the only one able to break in the charger, and therefore to fulfil the condition laid down by an oracle as the one necessary to win the crown of Macedon. B. d. in 326 B.C., during Alexander's Indian campaign, and his master built the city of Bucephala in memory of him.

Bucer, or **Butzer**, Martin (1491-1551), Ger. Protestant reformer, b. at Schlettstadt, Alsace. He was sent to Heidelberg to study after entrance into the Dominican order in 1506. He met Erasmus and Luther here and attended a disputation of the latter. He abandoned the Dominican body in 1521, and married a nun. He was excommunicated in 1523, and settled at Strasburg, where, during his stay, Henry VIII. sought counsel of him respecting his divorce from Catherine of Aragon. He aimed always at the union of Lutheranism with the views of the S. Ger. and Swiss reformers, and hence many charges of vagueness and lack of definite conviction have been levelled against him. In 1548 he was sent to Augsburg to sign the agreement, called the *Interim*, between the Papists and Protestants. His warm opposition to this project exposed him to many difficulties; he was almost alone in declining assent, and eventually he sought leave of absence, gladly accepting Crannuer's invitation to England. Here he was received with favour by Edward VI. and Somerset, and was appointed to teach theology in Cambridge Univ. He d. in Feb., two years after his arrival, and was buried at Cambridge, where he had been installed regius prof. of divinity. Mary, however, had his body exhumed and burnt. Among his treatises is *De Regno Christi*.

Buch, old dist. of France, is now included in the dept. of Gironde. It has for its cap. La Teste-de-Buch.

Buch, Christian Leopold von (1774-1853), Ger. geologist, b. in Brandenburg; studied with Alexander von Humboldt in the School of Mines at Freiberg. He spent almost his entire life travelling on foot throughout Europe in pursuit of geological facts, and was a member of numerous learned societies besides holding an official position at the Prussian court. His pub. works are very numerous, and include the *Physical Description of the Canary Islands*, with two supplementary treatises, dealing with volcanic action and continental upheaval, 1825; *Geognostic Observations on Travels through Germany and Italy* (1802-9); *Travels through Norway and Lapland, 1806-8* (1813), as well as a large number of memoirs in Ger. scientific journals.

Buchan, dist. in the highlands of Scotland, lying partly in the N.E. of Aberdeenshire and partly in Banffshire. B. Ness is the most easterly point in Scotland, and is about 3 m. from Peterhead. The coastline is mostly high and rocky, and below the Ness, in the granite cliffs, there is a curious well, some 100 ft. deep, into which the sea rushes through an archway of natural formation. The tns. of Peterhead, Macduff, and Fraserburgh are enclosed in the dist. of B. The Comyns were earls of it till they forfeited the title in 1309. There are a few interesting relics of bygone times, including a few ruined castles, and the remains of the abbey of Deer.

Buchan, Alexander (1829-1907), Scottish meteorologist, educated at Edinburgh Univ., taught from 1848 to 1860, when he

was appointed secretary to Scottish Meteorological Society. In 1878 B. became curator of library and museum of Royal Society of Edinburgh. His works include contributions to the *Challenger* expedition reports, 1889 and 1895; on *Atmospheric Circulation and Oceanic Circulation*; *Handy Book of Meteorology*; *Introductory Text-book of Meteorology* (1871). He wrote the article on meteorology for the ninth ed. of the *Ency. Brit.*

His famous weather forecasts resulted from a long and careful scientific study of weather conditions in Scotland. He discovered that there were certain periods in the year when the temperature, instead of rising, would remain stationary or would fall; others when, instead of falling, it would remain stationary or would rise. Two of the cold periods occur in the middle of May and from April 11 to 14; the April period consists of the 'borrowing days.'

Buchan was also a pioneer investigator into the Atlantic depressions and their influence on the climate. He was the author of *A Handy-book of Meteorology* (1867), and an *Introductory Text-book to Meteorology* (1871).

Buchan, David (1780-? 1837), Brit. naval commander and Arctic explorer. In 1811 he explored the Exploits R. in Newfoundland, and travelled about 160 m. into the interior. In 1818 he was in command of an Arctic expedition; he reached Spitsbergen with the *Trent* and *Dorothea*. Some years later he was lost at sea with the vessel *Upton Castle*.

Buchan, Elspeth (1738-91), Scottish religious enthusiast, founder of sect known as Buchanites. She claimed prophetic inspiration and divine powers. After separation from her husband she met the preacher Hugh White, 1783, and persuaded him to believe her the woman and himself the man-child of Rev. xii. The sect, always small, was banished from Irvine, 1784, and settled near Dumfries. Burns spoke slightly of them in a letter, 1784. They enjoyed community of wives and goods. The sect became extinct in 1848. See J. Train, *Buchanites from First to Last*, 1846.

Buchan, John, first Baron Tweedmuir (1875-1940), Brit. author and parliamentarian, b. at Perth, Scotland, eldest son of the Rev. John B. Educated at Glasgow Univ. and Brasenose College, Oxford; Newdigate Prize, 1898; in 1901 he became private secretary to Lord Milner, who was then high commissioner for S. Africa. He was home again in 1903, and became a director of the publishing house of Nelson. During the First World War he was on headquarters staff, 1916-17. In 1917 he became director of information. He entered Parliament as member for United Scottish Univs. at a by-election in 1927. President of the Scottish Hist. Society, 1929-33. Made Companion of Honour, 1932. He was lord high commissioner to the Assembly of the Church of Scotland, 1933-34. Raised to the peerage in 1935 when he succeeded Lord Bessborough as governor-general of Canada. As governor-general he was universally popular throughout Canada,

where he made contact with all classes of the pop., and, despite recurrent ill health, travelled extensively. During his tenure of office he visited President Roosevelt, and in 1937 made a 10,000-m. journey into the Arctic circle and N. Brit. Columbia. Privy Councillor in 1937, and in the following year, when home on leave, was installed as chancellor of Edinburgh Univ. Publications (mostly novels) include: *Scholar Gipsies* (1896); *John Burnel of Barn* (1898); *The Half-Hearted* (1900); *The Watcher by the Threshold* (1902); *The African Colony: Studies in Reconstruction* (1903); *A Lodge in the Wilderness* (1908); *Prestor John* (1910); *Sir Walter Raleigh* (1911); *The Thirty-Nine Steps* (1915); *Greenmantle* (1918); *Poems, Scots, and English* (1917); *Mr. Standfast* (1919); *A History of the Great War* (1921-22); *Huntingtower* (1922); *Midwinter* (1923); *The Three Hostages* (1924); *Lord Minto, a Memoir* (1924); *John Marnab* (1925); *The Dancing Floor* (1926); *Witch Wood* (1927); *Montrose* (1928); *The Courts of the Morning* (1929); *The Gap in the Curtain* (1932); *Gordon at Khartoum* (1934); *The King's Grace* (1935); *The House of the Four Winds* (1935); *The Island of Sheep* (1936); *Augustus* (1937); *Memory hold the Door* (1940); and *Sick Heart River* (1941). Also lives of Julius Cæsar, Oliver Cromwell, and Sir Walter Scott. See John Buchan by his Wife and Friends, 1945.

Buchan, Peter (1790-1854), collector of Scottish ballads, was b. at Peterhead. He taught himself copper engraving, and learnt printing. He then set up a printing press at Peterhead. Prosperity favoured him, and he was able to buy property in Scotland. His works include *Gleanings of Scotch, Irish, and English: Scarce Old Ballads* (1825); *Ancient Ballads and Songs of the North of Scotland* (1828). The MS. of a second collection was ed. for the Percy Society by J. H. Dixon and pub. in 1846 under the title of *Scottish Traditional Versions of Ancient Ballads*. Two other vols. remain unpublished in the Brit. Museum. There were numerous other works. He d. in London.

Buchan Ness, most easterly cape of Scotland (Aberdeen), sometimes called Boddam Point. It has a lighthouse. Near by are the Bullers of B., a group of strange rocks and caverns.

Buchanan, or Buchannan, Scottish par. in Stirlingshire, E. of Loch Lomond (over 41,000 ac.), a few miles from Drymen station. Little cultivation, mostly mountainous dist. B. Castle belongs to duke of Montrose. Pop. 600.

Buchanan, George (1506-82), Scottish historian and scholar, was brought up in humble circumstances by his mother, who was early left a widow. In 1520 his uncle sent him to the univ. of Paris. Five years later he graduated as B.A. from St. Andrew's Univ., and in 1528 obtained his M.A. degree at Paris. For the next three years he was regent or prof. at the college of Ste. Barbe. Whilst in Paris, B. began to lean towards Protestantism, and his first poem, *Somnium*, which he pub. on his return to Scotland in 1537, was a bitter

satire on the conduct of the Franciscan friars. James V. was so delighted with this attack on monastic life that he appointed B. tutor to one of his natural sons, and it was at his instigation that B. was induced to publish his *Franciscanus*, which expressed the sentiments of *Somnium* in bolder and more violent language. It is not, therefore, surprising that in 1539, when the Lutherans were harshly persecuted, B., among others, was arrested. He managed, however, to make good his escape, and is next heard of as prof. of Lat. at the college of Guienne, Bordeaux—an appointment which he owed to the exertions of his staunch friend, Andrew Govea. Whilst here he trans. Euripides' *Medea* and *Alceste*, and wrote his two great tragedies, *Baptistes* and *Jephthes*, which even yet have not obtained the recognition they deserve. Driven from Bordeaux by the plague, he was next prof. for three years (1544-47) at the college of Cardinal le Moine, Paris, when, again through Govea's influence, he was appointed lecturer at the univ. of Coimbra, in Portugal. On Govea's death he was immediately exposed to most tiresome persecutions. His imprisonment in a monastery, as the result of his examination before the Inquisition, was beneficial in that it induced him to begin his famous Lat. paraphrase of the Psalms. After holding a chair in the college of Boncourt, 1553-55, he was for five years tutor to the son of the celebrated Maréchal de Brissac. On his return to Scotland, 1560, he became classical tutor to Queen Mary, who estab. his worldly prosperity by giving him the revenue of Crossraguel Abbey. Notwithstanding this, he energetically supported the lords in their struggles with Mary. In 1567, shortly after Mary's imprisonment at Lochleven Castle, he was elected moderator of the General Assembly, having by then definitely adopted Protestantism. With Murray, who had appointed him prin. of St. Leonard's College, St. Andrews, in 1566, he attended the Conference of York, where Mary's complicity in Darnley's assassination was discussed before Elizabeth's commissioners. In his *Detectio Mariae Reginae* he stated in the strongest terms the lords' case against their queen. In 1570 he was chosen as preceptor to the young James VI. In 1578 he resigned his position as keeper of the Privy Seal, and devoted the remaining years of his life to his *History of Scotland*. B. was, undoubtedly, the most distinguished Brit. humanist of his day. His *History* is a valuable contribution to literature. Particular interest attaches itself to his account of contemporary events, which, though biased, is nevertheless trustworthy. His tract *De Jure Regni*, wherein he boldly argues that sovereigns exist by the will, and for the good, of the people, had a great influence on seventeenth-century statesmen. As a writer B. shows himself possessed of a poet's imagination, and a philosopher's power to think. Lives by D. Irving and P. Hume Brown.

Buchanan, James (1791-1868), fifteenth president of the U.S.A., b. near

Mercersburg, Pennsylvania; graduated at Dickinson College in 1809; called to the Bar in 1812. In 1813 and 1814 he was elected to the Pennsylvania legislature, and in 1820 became a member of Congress. In 1831 he was sent by President Jackson as minister to Russia, where he concluded a commercial treaty securing privileges for the U.S.A. in the Black and Baltic Seas. After his return in 1833 he was elected to the Senate, where he was a consistent supporter of Jackson and an advocate of the annexation of Texas. He left the Senate in 1845 to become secretary of state to President Polk, in which capacity he had to deal with the N.W. boundary dispute with England. In 1853 he was sent by President Pierce as minister to Great Britain, where he was mainly engaged upon Central Amer. affairs. In 1856 he was elected President of the U.S.A., in which office he supported the continuance of slavery, and was much influenced by the threats of secession of the S. states. He was succeeded by Lincoln in 1861, and retired into private life. In 1866 he pub. a defence of certain of his actions, entitled *Mr. Buchanan's Administration on the Eve of the Rebellion*. See his life by G. T. Curtis, 1883.

Buchanan, Robert Williams (1841-1901), Eng. poet, novelist, and dramatist, b. at Caverswell; educated in Glasgow; took up journalism in London together with David Gray. His first collection of poems, *Undertones*, appeared in 1860, and was followed in 1865 by *Idylls and Legends of Inverburn*, and in 1866 by *London Poems*. These last, dealing with the life of the London poor, reach a very high level. His other poetical work includes *The Book of Orm* (1870); *Balder the Beautiful* (1877); *The City of Dreams* (1888); and *The Wandering Jew: a Christmas Carol* (1893). His verse exhibits considerable genius, but tends to become assertive and egoistic. His chief success in the drama was *Sophia*, an adaptation of *Tom Jones*; and *Lady Clare*, adapted from Ohnet's *Le Maître de Forges*, and *Joseph's Sweetheart*, adapted from Fielding's *Joseph Andrews*, were also well received. His novels once had a considerable reputation and include *The Shadow of the Sword* (1876); *God and the Man* (1881); *Alone in London* (1884); *The Charlatan* (1894); *The Strange Adventures of Miss Brown* (1895); and *The New Rome* (1899). He also wrote *The Land of Lorne* (1871); *David Gray* (1868); and *The Hebridean Isles* (1882). Two reviews by him, 'The Fleshly School of Poetry,' attacking D. G. Rossetti (1871), and 'The Voice of the Hooligan' (1899), dealing with Kipling, roused much critical opposition.

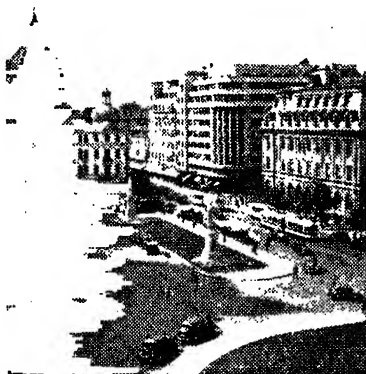
Bucharest (Bucuresti), cap. city of Rumania, on the R. Dimbovitza. It stands in a fertile plain, 265 ft. above sea level. The city was much improved during the latter part of the nineteenth century, and though the suburbs still contain many mean and narrow streets of an oriental aspect, the central part is mainly modern, being well paved, containing many handsome buildings, as well as sev. gardens and a famous public parade.

B., which is the seat of the head of the Rumanian and Gk. Orthodox Church, and also a Rom. Catholic episcopal see, is noted for its numerous churches. Among the most famous are the Gk. Cathedral, 1656, the Rom. Cathedral, 1875-84, the Domnita Balasa, St. Spiridon, and the chapel of Stravropolos. Its univ. was founded in 1864. The royal palace, standing on the Calea Victoriei, was rebuilt in 1883. In the same street are the National Theatre and the post office, while other prominent buildings are the National Bank, on the Strada Lipscaui, the Athenaeum, 1887, the Palace of Justice, Picture Gallery, Academy of

between Serbia and Bulgaria, in 1913 the one ending the Balkan wars, and in 1917 (see next article). The fortifications, constructed after plans by Brialmont during 1885-96, are very extensive, forming a circle over 40 m. in circumference round the city with 18 outer forts. But it was not possible to defend them during the First World war, and the city surrendered in 1916 without resistance to the Gers., who held it until 1918. There are air services to Belgrade and Istanbul. During the Nazi-inspired unrest in 1941 there was a rising of the Iron Guard, who attempted a *coup d'état* under their leader Codreanu in B., and large numbers of Jews were massacred in street fighting. In the course of the westward advance of the Russian armies early in 1944 B. was heavily bombed by the Amers., notably on April 4, when some 3000 persons were killed. The object of the raid was to disorganise transport and this was achieved. On the fall of the dictator Antonescu, the new gov. tried to 'liquidate' its relations with Germany, but the Ger. units in Rumania, disregarding assurances, attacked Rumanian units and machine-gunned the pop. in B. and elsewhere, while the Ger. Air Force bombed the city and other tns. The new gov. then turned its forces against the Gers., who were soon driven out of the cap. The Russians entered B. on Aug. 31, 1944. Pop. 641,000.

Bucharest, Treaty of (1917). Treaty signed between Rumania and the Central Empires on Dec. 17, 1917. The Rumanian armies, after the defection of the Bolshevik forces from the Entente cause, rapidly gave way before the reinforced armies of Gen. von Mackensen. Furthermore, they were attacked by the Bolsheviks and their tns. and vils. plundered by them. The defeat at Arges in Dec. 1916 and the loss of Tirgovistea, on the edge of the great Rumanian oil-field, rendered effective resistance ever more difficult. But the fighting dragged on for another twelve months, by which time Bucharest and Braila had fallen to the Ger. forces, and the Rumanians were compelled to sue for an armistice. In Feb. 1918 the Ger. Gov. sent an ultimatum to Rumania, giving her four days to enter on peace negotiations. The Bolsheviks having concluded peace with Germany, Rumania was compelled to accept the Ger. terms, and in May a treaty was signed at Bucharest which in effect was a complete capitulation to Ger. demands. The treaty was of course nullified by the armistice of Nov. 11, 1918. For the T. of B., July 1913, see BALKAN WAR, THE.

Buchenwald, site of one of the worst main Ger. concentration camps (*q.v.*), situated near Weimar. The camp was started in 1934 by the Nazis. It was badly laid out, and was planned to contain about 120,000 internees. On April 1, 1945, the number in the camp was 80,813. A few days before the arrival of the Amer. forces (April 11) the Gers. removed over 20,000 internees in order to prevent the Allies from learning too much about the camp. The internees, who included



Paul Popper

BUCHAREST: UNIVERSITY SQUARE

Sciences, and Central Library with between 800,000 and 900,000 vols. The chief public gardens are the Cismegiu and the Kisilev, traversed by the promenade known as the Chaussee and there are some fine monuments, including those to Jon Eliade Radulescu and Michael the Brave. B. has a large trade as an exchange between Austria and the Balkan Peninsula, and considerable quantities of textiles, grain, hides, metal, coal, timber, and cattle, pass through it. Its pre-1941 manufs. included flour, beer, soap, candles, bricks, textiles, ironware, chemicals and the transit trade in petroleum, timber, and agric. products is large. It is the centre of the national railway system. The climate is continental, with great extremes. From the end of the fourteenth century till 1698 B. was the residence of the prince of Wallachia; in 1789 it was taken by Austria and held for two years; and it suffered from plague in 1794 and 1812, from earthquake in 1802, and from fire in 1847. It became the cap. in 1859. Treaties were signed here in 1812 between Turkey and Russia, in 1886

persons of all European nationalities, comprised political prisoners and Jews from Germany; later, as the Reich expanded, political prisoners and Jews from Austria, Czechoslovakia, Poland, etc.; and, from 1940, men and youths imported for forced labour from occupied countries. The walls and paths were ill kept and either thick in dust or, in wet weather, deep in mud. The ordinary huts were rough wood constructions, with earth floors and no windows or sanitation. There were also some more solidly built of brick blocks, of two storeys. It appears that up to April 1, 1945, the total number of those who had d. or been killed at B., or immediately on removal therefrom to subsidiary 'extermination camps,' was 51,572. Detailed camp records, including nominal rolls, were left behind by the Nazis. The Amer. medical and sanitary authorities were soon preoccupied with the cleaning of the camp, a task performed partly by Ger. civilians from the vicinity, parties of whom were brought daily to see what had been done in their name and in their midst. The impression gained by a Brit. parl. delegation which, at the invitation of Gen. Eisenhower and on the injunction of Mr. Churchill, visited B. on April 21, even when conditions had been improved considerably in the meantime by the Amers., was of intense squalor, with an odour of dissolution and disease pervading the entire camp. One of the better huts was used as a brothel for higher-grade prisoners doing various supervisory jobs, with extra rations and other privileges. In general B. was for men and boys only; the women in the brothel were prisoners from other camps, induced by threats and promises of better treatment to become prostitutes, but subsequently killed. When the Amers. arrived fifteen women were found in this brothel. This hut was one of those used by the Amers. as transit hospitals for some of the worst cases of malnutrition. Before the arrival of the Amers. the number of deaths in the camp was about 100 a day. The usual clothing was a ragged shirt, vest, or cotton jacket, beneath which protruded thighs no thicker than normal wrists. The ordinary huts were lined on each side with four tiers of wooden shelves divided by struts. In each of the small open cubicles thus formed, about 6 ft. in depth, 4 ft. in width, and 2 ft. in height, six men had to sleep, there being room only to lie in one fixed position. The only bed-clothes were such rags as the prisoners could collect. For those suffering from tuberculosis or dysentery there was a rough hospital hut 80 ft. long by 24 ft. wide, containing on an average a sick pop. of from 700 to 1300. Operations were performed without anaesthetics on a crude operating-table in full view of the other patients. Each night the dead were flung into a small annexe at one end of the hut and each morning collected and taken into carts to the crematorium or, if required as specimens, to the pathological laboratory of the Nazi doctors. Children in the camp were made to work eight or more hours a day all the week. When

the parl. delegation visited the camp there were still 800 children in it. Access to the basement of the mortuary block was by a steep stone staircase or by a vertical chute below a trap-door, down either of which refractory or useless prisoners were precipitated for execution. The forty strong hooks for the gibbets were hurriedly removed by the Nazis before they left the camp. There was also a heavy wooden blood-stained club which was used for knocking out any who died slowly. To the yard outside the crematorium came the carts packed closely with the ordinary corpses from the dysentery and other huts, mostly stripped. Most of these appeared to have died of hunger or disease but not by violence. In the crematorium was a row of capacious ovens, in each of which were found calcined ribs, skulls, and spinal columns. The prisoner in charge of putting the bodies into the ovens had one of the 'privileged jobs,' carrying with it the advantage of a private room. He was a Communist who had been in the camp for ten years. Two other Ger. prisoners were mainly engaged in hanging the condemned. The delegation were told of scientific experiments, such as the infecting of prisoners with typhus in order to obtain serum from them, by the camp Nazi doctors. In a laboratory was seen a large number of glass jars containing preserved specimens of human organs. The walls of the laboratory and other medical rooms were decorated with death-masks of the 'more interesting' prisoners—many with features of remarkable nobility and refinement. Various experiments in sterilisation were practised on Jews. Some subjects of the operation died under it. Later the policy of exterminating the Jews superseded that of castrating them. Frau Koch, wife of the Ger. camp commandant, collected articles made of human skin. Pieces of hide were identified in England by Sir Bernard Spilsbury as being human skin. One of the pieces formed part of a lampshade. It was the parl. delegation's considered and unanimous opinion, on the available evidence, that a policy of steady starvation and inhuman brutality was carried out at B. for a long period of time, and that such camps as B. marked the lowest point of degradation to which humanity had yet descended. It is to be noted that the members of the delegation excluded from their report statements of which no material evidence was still visible when they visited the camp. (See Cmd. 6626, 1945, H.M.S.O.) B. was the first of the main concentration camps to be overrun by Brit. or Amer. forces and so lent itself to speedy investigation; but other camps were equally terrible, and some even worse. These included, e.g., Belsen, Auschwitz, Dachau.

Bucher, Lothar (1817-92), Ger. diplomat, educated at Berlin Univ. In 1848 entered Prussian national assembly, becoming active leader of the extreme Democrats. In 1850 B. fled to England under political charges, acting there as correspondent for the *National Zeitung*, and publishing *Der Parlamentarismus*

wie er ist. In 1860, on returning home, B. became Lassalle's literary executor. In 1864 he accepted a post in the Foreign Office from Bismarck, and became his private secretary. Made reporting councillor in Ministry for Foreign Affairs; Privy Councillor, 1876. Drew up the text of N. Ger. Confederation constitution, and took part in many diplomatic missions. Encouraged anti-Brit. feeling in Germany. Wrote *Silber aus dem Fremde, Kleine Schriften politischen Inhalts* (1893). See H. von Poschinger, *Leben und Werke*, 1890-94; W. Busch, *Bismarck: Some Secret Pages of his History*, 1898.

Bucheze, Philippe Benjamin Joseph (1706-1865), Fr. philosopher, b. at Matagne-la-Petite; began to practise as a physician in 1825. He was concerned in the organisation of the Fr. Carbonari Society, being strongly opposed to the Bourbon restoration, and was arrested on a charge of conspiracy. Shortly afterwards he joined the Saint-Simonian Society. In 1829 he left Saint-Simonian to found a Neo-Catholic school known as Buchezism, the doctrines of which he expounded in *L'Européen*, later called *La Revue nationale* (1831-48). His philosophy is also described in *Introduction à la science de l'histoire* (1833). After the revolution of 1848 he became deputy mayor of Paris, a member of the Constituent Assembly, and then president of that body. His other works include *Essai d'un traité complet de philosophie au point de vue du Catholicisme et du progrès* (1839-40); *Histoire de la formation de la nationalité française* (1859); *Traité de politique et de science sociale* (1866); and, with Roux-Lavergne, *L'Histoire parlementaire de la Révolution française* (40 vols.), 1833-38.

Buchholz, Ger. tn. of Saxony, near Bohemian frontier. Dates from sixteenth century, then a mining tn., now centre of passementerie industry. Before the Second World War it had large book-binding establs., manufs. of paper from wood fibre. Pop. 9000.

Buchman, Frank Nathan Daniel (b. 1878), Amer. Protestant minister, b. at Pennsburg, Pennsylvania, a leader of the Oxford Group (q.v.) and initiator of Moral Rearmament, 1939.

Büchner, Friedrich Karl Christian Ludwig (1824-99), Ger. physician and philosopher, b. at Darmstadt; studied at Giessen, Strasburg, Würzburg, and Vienna. In 1852 he became a lecturer at Tübingen, but the controversy raised by his *Kraft und Stoff* (1855) made it necessary for him to resign and take up a private practice in Darmstadt. His later works include *Die Darwinische Theorie* (5th ed.) (1890); *Der Mensch und seine Stellung in der Natur* (1870, Eng. translation, 1872); *Aus Natur und Wissenschaft* (2 vols.) (1862-84); *Licht und Leben* (1881); *Der Fortschritt in Natur und Geschichte im Licht der Darwinischen Theorie* (1884); also *Im Dienste der Wahrheit* (a selection of his posthumous essays, with a memoir by his brother) (1899).

Buchu, or Bucky, see BAROSMA.

Buck, Dudley (1839-1909), Amer. musi-

cal composer, b. at Hartford, Connecticut; studied in Germany and France; returning to America he was organist at Hartford and Brooklyn. He composed church and other choral music, operas, cantatas, and also wrote some books on musical subjects. Best known among his works are the cantatas *Columbus* (1876), *Golden Legend* (1880), and *Light of Asia* (1885).

Buck, Lafferto (1837-1900), Amer. engineer, famous as a builder of bridges, of which he constructed a number in U.S.A. and S. America. His most important achievement was his rebuilding of the suspension bridge at Niagara Falls.

Buck, Zechariah (1798-1879), Eng. choirmaster and organist, b. at Norwich. Most of his life was passed in connection with Norwich Cathedral, where he was a chorister and, later, organist. He continued to be organist until nearly eighty years of age. His fame, which remains considerable (Scholes), attaches solely to the one capacity in which he was pre-eminent, that of training choirboys by methods both ingenious and (sometimes) harsh.

Buck-bean, or *Menyanthes trifoliata*, is a European species of Gentianaceae. It is often called bog-bean.

Bückeberg, cap. of Land Schaumburg-Lippe, 30 m. from Hanover, has a castle with a 'golden hall' and castle church of about A.D. 1600 and a Lutheran church of 1613. Pop. 6800.

Bucket-shop, term used to denote the office of a share-broker who is not a member of the Stock Exchange, and, consequently, not subject to its rules and penalties. Deals in stocks and shares of a speculative nature are made, and often, indeed, involve fraud. There are, however, 'outside' brokers who carry on a perfectly legitimate business. The term originated in the small lift or 'bucket' by which members of a gambling exchange reach a Chicago office.

Buckfastleigh, urb. dist. of Devonshire, England, 7 m. N.W. of Totnes. In it are the ruins of a Cistercian abbey. Near by the Benedictine monks have built a monastery and a church. Pop. 2500.

Buckhaven and Methil, united burgh in the par. of Wemyss, Fifeshire, Scotland, with a pop. of 18,000, a good shipping station for the export of coal and a shelter for fishing boats, B. having a harbour and M. three docks. Fishing nets are manufactured at B., which is a popular holiday resort.

Buckhound, name applied to the stag-hounds at one time bred particularly for the purpose of buck-hunting. A royal pack was kept, and a nobleman held the mastership. In 1901 the hunt and mastership were abolished.

Buckhurst Hill, urb. dist. of Essex, England, 10 m. N.E. of London. Not far distant are Epping Forest and Hainault Forest.

Buckle, fishing tn. on the Moray Firth, in Banffshire, Scotland. It is the chief tn. of the fishing dist. from Banff to Findhorn, and possesses a fine harbour, with an area of 9 ac. and good quays.

The largest fleets land here in the herring season. Pop. 8700.

Buckle, see WHEEL.

Buckingham, George Villiers, first Duke of (1592-1628), was b. at Brooksby, Leicestershire. In 1614 he was introduced at court, and, on the fall of Somerset, his good humour and his inexhaustible fund of animal spirits at once raised him into high favour with King James. In 1618 he was created marquess of B. Remunerative offices and monopolies, gifts of rich lands and the dowry of his wife, the earl of Rutland's daughter, made him one of the wealthiest peers in the kingdom. B. soon acquired a powerful influence over the Prince of Wales, whom he persuaded to accompany him to Madrid in 1623. He fondly hoped that the projected marriage of Charles with the Infanta would bring with it the Palatinate as a marriage portion. His arrogance was largely responsible for the failure of the negotiations. It was B. who persuaded Charles to promise concessions to the Eng. Catholics, without which Louis XIII. would not allow his master to marry the Princess Henrietta. Meanwhile he had been created duke and appointed lord warden of the Cinque Ports. The attempts of B. and Charles to win over public opinion by capturing Sp. treasure ships at Cadiz were abortive. In 1626 Charles dismissed his second Parliament, as it had instituted an impeachment of his favourite before the House of Lords. In 1627 B., having raised a forced loan, commanded an expedition to La Rochelle, to help the Huguenots. As the expected reinforcements never came, he had to abandon his siege in the isle of Ré and return home in disgrace. On June 7, 1628, Parliament demanded the surrender of B., who persuaded Charles not to sign the famous petition. To save his friend, the king prorogued Parliament. Popular feeling ran high and lampoons against the duke were freely circulated. Finally, John Felton, a disappointed, ill-treated subaltern, assassinated him at Portsmouth, where he was about to re-embark for La Rochelle.

Buckingham, George Villiers, second Duke of (1627-88), was, after his father's death, brought up with Charles I.'s children. He joined the Royalists in 1648, had his estates confiscated, took part, with Charles II., in the battle of Worcester, and made, like his master, a miraculous escape. In 1657 he married Lord Fairfax's daughter, and at the Restoration recovered his lands. In 1671 he killed the earl of Shrewsbury in a duel, while the countess, his mistress, looked on, disguised as a page. Four times imprisoned in the Tower for ridiculous exploits of ambition, he was largely responsible for Clarendon's downfall, joined the disreputable Cabal, and on its break-up in 1673, became, with his characteristic versatility, the zealous friend of democracy. On the king's death, being entangled in pecuniary difficulties, he retired to Helmsley in Yorkshire, where he spent his days hunting. He d. ignobly, but was buried in Westminster Abbey. Of his excep-

tional talent there can be no doubt; witness his *Rehearsal*, a witty travesty of the stilted style of Dryden's tragedies. But he was destitute of principle, and was one of the wildest rouses of a court the immorality of which is notorious. There is a brilliant, satirical sketch of him as Zimri, in Dryden's *Abalom and Achitophel*.

Buckingham, James Silk (1786-1855), traveller and miscellaneous writer, b. near Falmouth, and early adopted a seafaring life, visiting the W. Indies and America. Later he turned to literature, and in 1818 founded the *Calcutta Journal*, which was suppressed by the E. India Company, because in it B. agitated for a free press and various other reforms, including the abolition of suttee. From 1824 to 1829 he conducted the *Oriental Herald*, and by means of this and his lectures paved the way for the abolition of the company. He pub. sev. books of travel and an autobiography. His *Travels in Mesopotamia* (1827), though now out of date, contains much valuable archaeological information. Consult R. E. Turner, *James Silk Buckingham*, 1934.

Buckingham and Chandos, Richard Plantagenet Temple Nugent Brydges Chandos Grenville, second Duke of (1797-1861), only child of the first duke, known as marquess of Chandos after 1822. Educated at Eton and Oxford. M.P. for Buckinghamshire, 1818-39. Introduced the tenant-at-will clause into Reform Bill of 1832, extending county franchise to 250 (known as the Chandos clause, only part connected with a single name). In 1836 obtained a committee for considering 'the grievances and depressed state of agriculturists,' becoming known as 'the farmer's friend'; 1839, succeeded to his father's dukedom; became colonel of Royal Bucks regiment of yeomanry; held office under Peel, 1841, but opposed repeal of the Corn Laws and retired. His estates were heavily encumbered, and his own expensive habits aided his becoming bankrupt for over a million, 1847. Many of his estates were sold, 1848, including his valuable collections of pictures, china, books, and furniture at Stowe. Among his works are *Agricultural Distress; its Cause and Remedy* (1835); *Memoirs of the Court and Cabinets of George III.* (1853-55); *Memoirs of the Court of England, 1811-20* (1856); and of courts of George IV., William IV., and Victoria, 1859-61. His *Private Diary* appeared 1862.

Buckingham (or Buckinghamshire) and Normanby, John Sheffield, Duke of (1648-1721), son of the earl of Mulgrave, he succeeded to the title in 1658, and, entering the navy, was appointed to the command of a ship, and shortly afterwards received a commission in the army as colonel. During the reign of James II. he became lord chamberlain, and in the time of William III. a cabinet councillor. By William he was made marquess of Normanby, and in 1703, on the accession of Anne, he became duke of the co. of Buckingham, and keeper of the privy seal. He was obliged to resign office in 1705, but in 1710 returned to power as lord steward of the household, and in

the following year was made lord president of the council. He wrote a number of poems, and, as well as *An Essay upon Satire* (1675), *An Essay upon Poetry* (1682).

Buckingham, co. tn. of Buckinghamshire, is 50 m. from London by rail. It is situated on the Ouse, which almost encloses it, and is crossed by three bridges. It is an anct. tn., being mentioned as a bor. in the Domesday Book. There is an Edward VI. grammar school. There are limestone quarries, corn mills, etc., and a trade in wool, hops, etc. Pop. 3600.

Buckingham, banking tn. of Quebec on

of the palace, which abuts, on the S.E., upon B. P. Road. St. James's Park lies to the E. and Green Park to the N. and N.W. The throne-room, drawing-room, and picture gallery are the prin. state rooms. In the last named are many valuable works of the Eng., Fr., Dutch, and Flemish schools. The palace was bombed in the Second World War, on each occasion only with damage to the precincts. On the first occasion, Sept. 1940, a day raider damaged the W. and S. pavilions respectively, the private chapel, and the swimming bath. A few days later a stick of bombs fell across the



D. McLessh

BUCKINGHAM PALACE

the Canadian Pacific Railway, 20 m. from Ottawa. Pop. 3835.

Buckingham Canal, salt-water canal of India, parallel to E. coast, forming important means of communication between Madras and the Godavari.

Buckingham Palace, London home of the Brit. sovereign, stands in St. James's Park, S.W., facing N.E. along the Mall. It was originally built in 1703, by a Dutch architect, for John Sheffield, duke of Buckingham and Normanby, but in 1761 was purchased by George III. It was reconstructed, in Classic style, by John Nash in 1825-36; in 1846 a new wing was added, and in 1856 the great ballroom, 111 by 60 ft., was built. In 1913, as a part of the Queen Victoria Memorial, it was refronted, in Portland stone, in Renaissance style, Sir Aston Webb being the architect. The extensive grounds (43 ac.) lie W. and S.W.

Mall front, damaging the roadway and railings and narrowly missing a sentry. See B. H. Clifford Smith, *Buckingham Palace: its Furniture, Decoration, and History*, 1931.

Buckinghamshire, S. midland co. of England, bounded by Northamptonshire on the N., Oxfordshire on the W., Berkshire on the S., and by Hertfordshire, Middlesex, and Bedfordshire on the E. Its area is 743 sq. m. It is an agric. co., having nearly 90 per cent of the land under cultivation. The vale of Aylesbury, stretching across the centre, and lying between hills on each side, is noted for its extremely fertile nature, and is one of the most valuable dists. in England. It affords rich pastures for sheep, cattle, and horses. The sheep are noted for their fine luxuriant fleeces. The breeding and rearing of cows is important, Herefords and Shorthorns being favourite stock.

Pigs and ducks are reared extensively on the dairy farms, to be sent to London markets. Milk and cream cheeses are also made for London, and it is estimated that some 2000 tons of butter are sent yearly to the great metropolis. The prin. crop is wheat, and turnips and swedes are the chief green crops. About 3500 ac. are orchards, and 32,000 ac. are forestry. The woods are extensive in the N., and in the S. the forests are chiefly beech-trees. The rvs. of B. are the Thames, on the S.W., and the Colne and Thame, feeders of the Thames, the Ouse, and its feeder the Ousel. The Grand Union Canal passes through the co. The railway junctions are Aylesbury, Princes Risborough, Bletchley, and Verney. The manufs. are lace, printing, and paper. B. is divided into eight hundreds, Newport, Buckingham, Ashendon, Cottlesloe, Aylesbury, Burnham, Stoke, and Desborough; the last three form the Chiltern Hundreds. Buckingham is the co. tn., but Aylesbury is the assize tn. The co. returns three members to Parliament. Pop. 272,000. See J. Betjeman and J. Piper, *Murray's Buckinghamshire Guide*, 1948.

Buckland, Francis Trevelyan (1826-80), Eng. naturalist, son of Dean Wm. B. (q.v.), b. at Christ Church, Oxford; educated at Winchester and Christ Church. In 1848 he went to London to study medicine, and was house surgeon at St. George's Hospital in 1852-53. At about this time he made the observations recorded in his *Curiosities of Natural History* (1857-72). On the staff of the *Field*, 1856-65; in 1866 he estab. his own periodical, *Land and Water*. In 1865 B. estab. a piscicultural exhibition at S. Kensington Museum. One of the most popular writers on scientific subjects of his time, his works include *The Log-book of a Fisherman and Zoologist* (1875); an ed. of White's *Selborne* (1875); *Natural History of British Fishes* (1881); *Notes and Jottings from Animal Life* (1882). See life by G. C. Bompas, 1885.

Buckland, William (1784-1856), Eng. geologist, dean of Westminster; b. at Tiverton, Devon; educated at Winchester and Corpus Christi, Oxford. In 1813 he succeeded Dr. Kidd in the chair of mineralogy at Oxford, accepting in the same year the newly founded readership in geology at that univ. His inaugural address, dealing with the relations between geology and religion, was pub. in 1820 under the title of *Vindiciæ Geologicae*. He also organised the geological museum afterwards given to Oxford Univ. In 1823 he pub. his *Reliquiæ Diluvianæ*, and in 1829 described and named the then recently discovered *Pterodactylus macronyx*. In 1825 he had become rector of Stoke Charity, Hampshire, and in 1845 was nominated dean of Westminster. See life by Mrs. Gordon, 1894, and a selection from his works by L. R. Brightwell, *Buckland's Curiosities of Natural History*, 1948.

Buckle, George Earle (1854-1935), Eng. journalist, b. at Twerton, nr. Bath; educated at Honiton Grammar School, Winchester College, and Oxford (M.A.

1879). Barrister at Lincoln's Inn, 1880, but never practised. Joined editorial staff of *The Times*, 1880; on Chenery's death, editor from 1884 to 1912. The six years of Unionist rule, 1886-92, when *The Times* opposed Home Rule, were the most arduous of B.'s career, for a series of articles on Parnellism led to a judicial inquiry before a special commissioner, which entailed heavy financial loss upon the proprietors of the paper. B. tendered his resignation, but it was declined and he remained in office till his retirement in 1912. Completed third vol. of *Life of Beaconsfield* begun by W. F. Monypenny; wrote remaining three vols. by 1920; revised, 1929.

Buckle, Henry Thomas (1821-62), Eng. social historian, b. at Lee, Kent; educated at home on account of ill health. He was introduced by Hallam to the Society of Antiquaries and the Royal Literary Society, and gained the friendship of sev. eminent men. In 1857 there appeared the first vol. of his *History of Civilisation*, the scope of which, originally intended to include the whole of Europe, was restricted to England. The second vol. appeared in 1861, having been written with great difficulty owing to domestic troubles and illness. The work had an extraordinary contemporary reputation, but later developments in historical study have made clear the disadvantages under which B. laboured in having been deprived of a univ. education. He had, however, great literary power, and extensive knowledge. He d. at Damascus of typhus fever, contracted during a visit to the E. His *Miscellaneous Works* were ed. in 3 vols. in 1872, and his *Life and Writings*, by A. H. Huth, appeared in 1880.

Bucklersbury, dist. of London, formerly spelt Bokerelesburi, named after the wealthy family of Bokereles, who lived there in the thirteenth century. In Stow's time the street was given up to apothecaries and grocers. Shakespeare's friend, Richard Quiney, carried on business there. Falstaff (*Merry Wives*) says gallants 'smell like B. in simple time.' Ben Jonson also refers to it, and Sir Thomas More lived there for a time. It ran between Walbrook and Queen Victoria Street and on to Cheapside.

Buckley, urb. dist. of Flintshire, Wales, 3 m. E. of Mold by rail. It has manufs. of earthenware and of tiles. Coal-mining is another activity. Pop. 7000.

Buckley, Arabella Burton (Mrs. Fisher) (1840-1929), Eng. naturalist, b. at Brighton, daughter of Rev. J. W. Buckley, vicar of Paddington; lecturer on natural science, 1876-83. Her works are popular and suitable for the young. They include: *A Short History of Natural Science* (1876); *The Fairland of Science* (1878); *Life and her Children* (1881); *Winners in Life's Race* (1883); *Moral Teachings of Science* (1891); *Eyes and no Eyes* (1901).

Buckmaster, Sir Stanley Owen, first Baron, of Cheddington, in the co. of Buckingham (1861-1934); Eng. lawyer; third son of John Charles B., of the-

Science and Art Department, Kensington. Educated at Oxford; called to Bar at the Inner Temple, 1884; K.C., 1902, and notable as a 'special' Chancery counsel; Liberal M.P. for Cambridge bor., 1906-10, and for Kelghley div. of W. Riding of Yorks, 1911-15. Counsel to the univ. of Oxford, 1911-13; when the war came, in 1914, he added to his duties those of director of the Press Bureau (*q.v.*), in which capacity he incurred criticism by Lord Morley on account of his arguments in favour of censoring the press for criticising ministers. He relinquished these offices to become lord chancellor, 1915, on the resignation of Lord Haldane. His tenure of office came to an end in 1916, when Lloyd George became Prime Minister, but he remained active as a law lord, being especially interested in the movement for the reform of the divorce law, and introduced the Matrimonial Causes Bill. In 1929 he was chairman of the Political Honours Review Committee—a testimony to his integrity. Won a high reputation as Speaker of the House of Lords. In 1925 he gave up his judicial duties to become president of Brit. Controlled Oilfields Ltd.—an unfortunate step owing to the involved state of the company's affairs. He soon resigned this post and resumed his duties as a Lord of Appeal, Viscount, 1933. He supported birth control and was president of the council for co-ordinating the work of the various societies opposed to capital punishment.

Bucknill, Sir John Charles (1817-97), Eng. physician; studied medicine at Univ. College, and became councillor, censor, and Lumleian lecturer in the College of Physicians and Surgeons there. B. was a great authority on insanity, being first medical superintendent of Devon Co. Asylum, 1844-62, and the lord chancellor's medical visitor of lunatics, 1862-76. He was knighted 1894. B. originated the *Journal of Medical Science and Brain: a Journal of Neurology*, being editor for some time. His works include *Unsoundness of Mind in Relation to Criminal Acts* (1857); *The Psychology of Shakespeare* (1859); *The Medical Knowledge of Shakespeare* (1860); *Notes on Asylums for the Insane in America* (1876); *Habitual Drunkenness and Insane Drunkards* (1878); *Care of the Insane and their Legal Control* (1880).

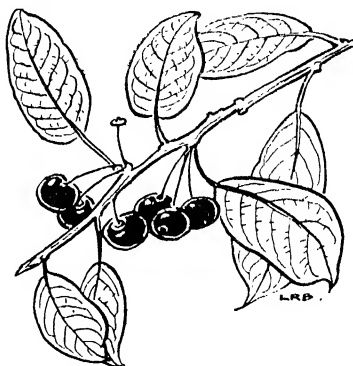
Buckram was once a rich woven cloth, considered especially suitable for church vestments. Thus the bishop of Exeter, in 1327, presented his cathedral with banners of red and white B. To-day it denotes coarse linen or cotton fabric stiffened with glue or size. Its stiffness renders it useful for lining belts, collars, bonnets, etc., and also for bookbinding.

Buckskin is a twilled cloth, made of wool, with the nap cropped off very finely. The B. breeches are made of this material. It is also a soft leather made from sheep- or deer-skin.

Buckstone, John Baldwin (1802-79), dramatist, actor, and theatrical manager, b. at Hoxton; was destined for the sea, but refused, and after a short time in a

solicitor's office, took to theatrical pursuits. He joined a company of strolling players, and rapidly attained a reputation as a low comedian. In 1823 he first appeared in London as Ramsay in *The Fortunes of Nigel*; in 1824 joined the Coburg company, and in 1827 D. Terry's company at the Adelphi, appearing there in his own play, *Luke the Labourer*. His connection with the Haymarket began in 1833, and in 1853 he became manager there. His numerous plays were mainly successful owing to his knowledge of stage effect.

Buckthorn is the name given to various species of *Rhamnus*, the typical genus of the order Rhamnaceæ. *R. cathartica* is the common B., with opposite leaves and thorny twigs; the berries have cathartic properties, and their juice is used in the



BUCKTHORN

manuf. of sap-green. *R. frangula*, the Alder B., has scattered leaves; the wood produces a light charcoal used in making gunpowder, and the bark is cathartic. Both these species are natives of Britain. The Sea B., *Hippophae rhamnoides*, not related to the above, is a willow-like shrub with silvery leaves.

Buckwheat, or *Fagopyrum*, is a genus of Polygonaceæ, closely allied to the rhu-barb. It derives its name probably from O.E. *boc*, beech; cf. the Ger. trans. 'beech-wheat' in Barnaby Googe's version of Heresbach's *Husbandry*, 1577: 'I had rather call it Beechwheate, because the graine thereof is three-corned, not unlike the beechmast both in colour and form.' Beechmast was also called buckmast in O.E. The common B., or *Fagopyrum esculentum*, is a native of Russia and central Asia, but it has become naturalised in Britain, where it is grown chiefly as food for poultry. *F. tataricum*, the Tartarian B., is a more hardy plant, but the flour obtained from it is not so good. *F. cymosum* is the perennial B. of India, while *F. convolvulus*, the black B. or climbing B., is a Brit. weed. It is also valued as food for cattle,

and as a plant producing much honey it is useful in bee-keeping areas. Another useful feature of the B. is that it can be grown on poorer soil than wheat or other cereals. As a cereal grown for human consumption in the form of B. cakes, B. is cultivated especially in N. America. B. flour is made from the 'seed' or kernel of the fruit. The chief states given to the cultivation of B. in the U.S.A. are Pennsylvania, New York, and Minnesota. The average yield for the whole of the U.S.A. is 14,000,000 bushels. In Canada the average yield is 10,000,000 bushels.

Bucolios (derived from the Gk. word *βουκόλος*, a shepherd) has come to be a synonym for pastoral poetry. A late Gk. writer, Theocritus (*q.v.*), wrote a delightful collection of B., which breathe the simple charms of country life. B. is assumed to have been the title which Virgil originally gave to his pastoral poems or *Eclogues*, wishing probably to excite comparison between his poetry and that of his famous rival. In the grammarians the B. of Virgil are also called *Eclogæ*. The framework of Milton's *Lycidas* is bucolic, for the poet pictures himself and his friend as shepherds 'nursed upon the self-same hill.' Roussard gathered his eclogues together under the title *Les Bucoliques*, but otherwise the term has not been used by moderns, as opposed to classical poets. However, the adjective bucolic is frequently used to describe the character of such a work as Sidney's *Arcadia*.

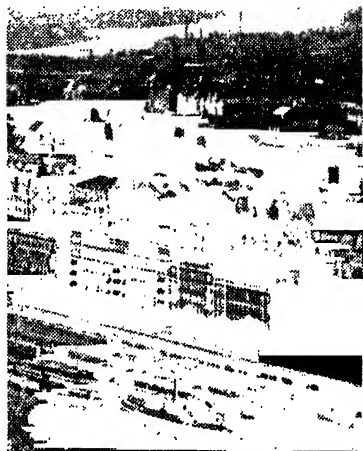
Bucyrus, industrial city in Crawford co., Ohio. Pop. 9750.

Buczacz, formerly tn. in Poland, in the prov. of Tarnopol, with 8000 inhab., of whom many are Jews. During the Russian offensive from Dec. 24, 1915, to Jan. 15, 1916, and on June 12, 1916, B. was one of the crucial points of the struggle. In the 1939 partition of Poland B. fell within the Russian div.

Bud is the term used to indicate an undeveloped shoot. It is called a leaf-bud if it is about to develop into a branch bearing foliage leaves, and a flower-bud if to bear a flower, which is really a modified shoot. If it appears at the apex of a stem it is said to be terminal, if in the axil of a leaf it is axillary or lateral, and if from any other part it is adventitious. If sev. Bs. occur in the axil of a single leaf they are called *accessory* Bs. In some cases Bs. remain undeveloped for a long time, when they are said to be latent, or dormant, and these are of great importance when frost has destroyed the early Bs. Winter buds are often prevented from dying by loss of moisture by such developments as the secretion of resin, as in the horse chestnut, or a covering of hair, as in the willow. On the outside a B. is covered by overlapping B. scales, which represent modified leaves (as in lilac) or parts of leaves (leaf bases in horse chestnut, stipules in beech). The colour and shape of the buds provide a useful means of identifying trees in winter; e.g. the black Bs. of the ash and the cigar-shaped ones of the beech are quite characteristic. Water plants often hibernate in the form

of special winter Bs. (*turiones*). The Brussels sprout is an example of a large axillary B.

Budapest, cap. city of the republic and former kingdom of Hungary, standing on the edge of the great Hungarian plain on both sides of the Danube. The two cities, Buda, on the r.b., and Pest or Pesti on the left, were united in 1873, and, before 1945, were joined by five bridges. But four of those bridges were shattered during the eleven weeks of siege and fighting from the late autumn of 1944 to April 1945. Gaunt pillars with tangled wreckage sagging in the Danube were all



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that remained, after the fall of the city, of the Szechenyi chain bridge (1842-49), between the two commercial quarters, the Queen Elizabeth suspension bridge, and the Margaret bridge, which all used to be objects of rare beauty in the illuminations which decked them by night. Only the Franz Josef bridge remained intact, as also a railway bridge. Buda, the older and formerly the more important of the two parts, stands on and around two hills. On one stands the damaged royal castle, erected by Maria Theresa, and the ruins of a fortress, rebuilt after being destroyed by the Hungarians in 1849. The palace chapel of St. Sigismund contains the Hungarian regalia and the hand of St. Stephen. On the Buda Hills, on the S. side of this hill, stands what remains of the old citadel, while on a lower mound to the N. is the Turkish mosque, built over the tomb of the saint Sheikh Gül-Babas. Other prominent buildings are or, before 1945, were the palace of Archduke Josef, the residence of the premier, and of the

minister of national defence, all standing in the Georgplatz, where there were a monument to Gen. Hentzi, the thirteenth-century par. church of St. John, and the National Lunatic Asylum. Pest, the more modern of the two cities, stands upon a sandy plain with fine quays along the Danube. The main streets radiate from the Belvaros, which is enclosed by boulevards replacing the old city walls. The most notable buildings (many considerably damaged in the Second World War) are the Houses of Parliament and Palaces of Justice (1896), the Academy of Sciences (1862-64), containing valuable art collections and a fine library, the Bourse, and the Redoute buildings, all on the Franz Josef Quay; the National Museum (1850), Theatre, and Univ. (1783), in Museum Street; the Industrial Art Museum, in Ullot Street; the Royal Military Academy (1872), in the Orszu Gardens; and the Leopold Basilica (1851-68), in Andrassy Street, once one of the most handsome thoroughfares in Europe. Also should be mentioned the par. church, a Gk. church, and a Jewish synagogue, and numerous parks, including one on Margaret Is. Buda was originally the Rom. colony of Aquincum and the cap. of Lower Pannonia. In the thirteenth century it was the prosperous Ger. tn. of Old Buda (Alt Ofen), but was destroyed by the Mongols in 1241. It was rebuilt by Bela IV. and was the residence of the kings of Hungary till captured by the Turks in 1526. It was held by them from 1641 to 1686, when the Hapsburgs recaptured it. It was stormed by the Hungarians in 1849. Pest appears to have been populous in the thirteenth century, but was destroyed in the Turkish wars after 1541. In 1867 it became the cap. of the Hungarian kingdom. Both tns. have valuable baths and sulphur springs, famous even in Rom. times. B.'s development stopped almost entirely during the First World War; the great housing shortage was made still more acute by the influx of refugees detached from Hungary by the treaty of Trianon. In 1918 B. suffered at the hands of the Bolsheviks, and in 1919 at the hands of the Rumanians, who occupied the city from Aug. to Nov. when they were ordered by the Supreme Council to evacuate it. In the Second World War B., garrisoned by Gers. and Hungarians, was completely invested by the Russians at Christmas 1944, and suffered a three months' siege (see EASTERN FRONT, IN SECOND WORLD WAR). The siege and fighting reduced whole areas of B. to desolation, the worst area being in the neighbourhood of Castle Hill in Buda. On that side of the riv. tremendous damage was done during the six weeks of fighting that raged round the Vermezo—a traditional scene of bloodshed, but bloodier still in this last struggle. The fierce fighting of April 1945 spread all along the Margit Koruth, towards Margaret Is., which lay devastated. A similar scene of destruction was found along the S. slopes of the Gelert Hill where, however, the statue of St. Gelert, like that of St. Stephen, near the Corona-

tion Church, escaped unscathed, a lonely survival amidst the widespread desolation. Many of the buildings of the riv. embankments were also reduced to ruins and ceased to be a promenade, while the Corso was entirely destroyed. The Parliament building, as seen from the Castle Hill, still appears to be a fine edifice of dome and minarets, but some of these were knocked sideways and the inside of the building was gutted. Around the Fishers' Bastion, one-time haunt of visitors, lay piles of wreckage, burnt and blasted buildings stood on all sides, and, in the centre, the Coronation Church was battered though not wholly destroyed, the Royal Palace being in the same condition. Across the riv. in Pest were similar scenes of destruction and damage along dozens of streets like the once elegant Vaci Utca and in squares like Kalvin Ter, with here and there something of note surviving, like the basilica of St. Stephen.

Milling is the industry from which B. has in the past derived most of its wealth, but since much of the rich cornlands that formerly belonged to Hungary have passed into the hands of other states, grain had to be imported and the milling industry became depressed. But before 1939 there was still an important machine industry and new textile and chemical works were started. Dock reconstruction was commenced in 1922. B. has a univ. and a large technical high school; in 1929 an independent faculty of economics was founded. Geological and meteorological institutes were estab. some years before 1939. Communism came to the fore in B. with the triumph of Soviet arms, but its success among the inhab. was almost as artificial and unreal as in Vienna. But having come to Hungary under the aegis of the Red Army, it was not accompanied by the excesses which, after the First World War, made Bela Kun's reign of terror one of the bloodiest episodes of the period. Pop. (1941) 1,163,000. See C. Holland, *Hungary: the Land and its People*, 1935; E. de Megery, *Budapest Scrap Book*, 1938; *Budapest* (Griebin's Continental Guide Book), 1938.

Budaun, dist. and tn. in India, 140 m. N.W. from Lucknow. The dist. is fertile, and watered by the Ganges, Ramganga, Sot, and the Mahawa. Its area is 2005 sq. m. Rice, wheat, cotton, and sugar-cane are grown. Pop. 1,000,000. Tn. 39,120.

Budd, William (1811-80), Eng. physician, educated in London, Edinburgh, and Paris. M.D. Edinburgh, 1838; gold medalist for essay on acute rheumatism. In 1839 B. began his life-work—study of the origin and transmission of typhoid fever. In 1842 settled at Bristol, becoming physician to Royal Infirmary there, 1847-62. B. zealously promoted Bristol water-works, and did much for the improvement of sanitation. In 1873 ill health obliged him to give up practice. Chief work, *Typhoid Fever, its Nature, Mode of Spreading, and Prevention* (1873). Others are: *Malignant Cholera* (1849); *Siberian Cattle Plague* (1865); *Cholera and Disinfection*; *Scarlet Fever and its Prevention* (1871).

Buddha and Buddhism. Buddhism is a religion that derives its name from its founder, Buddha, or, more correctly, 'The Buddha,' which means 'The Awakened' or 'The Enlightened.' Despite the fact that Buddhism numbers among its adherents about one-third of humanity, the amount of exact information concerning the foundation of this remarkable faith is far from exhaustive. There appears, however, to be a general consensus of opinion among orientalists that Buddhism had its origin in the N. of India in the seventh century B.C. from a Hindu prince named Siddhartha, or, as he is often called, Gautama. There are those who doubt whether Gautama (or Buddha) was an actual historical person, as there are those who question the historical existence of Christ, and it may be remarked that, as in the case of Christianity, the founder of Buddhism wrote nothing himself. It was only some three centuries after his death that councils were held by the adherents of the new faith to settle the canon of its sacred writings and to fix its doctrine. These councils numbered three, the first being held by his chief followers immediately after the death of Buddha. Schism and secession led to the holding, a century later, of a second council in order to uphold the doctrine against the schismatics, but it was not till 244 B.C. that Asoka, king of Magadha (now Behar), and at one and the same time the Apostle Paul and Emperor Constantine of Buddhism, summoned a third council to fix the canon more precisely. This was apparently not reduced to writing till about 150 years later, when the canon stood substantially as it does now. The sacred writings are divided into three parts (the *tripitaka* or 'triple basket'): (1) For the laity; (2) for devotees, i.e. monks, etc.; and (3) a metaphysical section. The prin. texts are the Sanskrit version of Nepal and the books of the Ceylon Buddhists in the Pali language (see *PALI*), and the Chinese and Jap. translations of Sanskrit MS. The story of the life of Buddha and a brief summary of his teaching is given in fluent verse by Sir Edwin Arnold in his *Light of Asia*, and may be briefly outlined here. Prince Siddhartha was the son of Suddhodana, king of Kapilavastu, a kingdom situated near the boundary of Oudh and Nepal. His mother's name was Maya, and according to some legends Buddha's was a virgin birth. The date of his birth has been approximately fixed at 550-560 B.C. Many are the stories told to show how in early life the young prince evinced that preoccupation with the suffering of all sentient beings which was to set him on his life's mission, viz. the search for the solution of the problem of pain. This preoccupation alarmed the king, for he feared his son would abandon his high station as ruler. In the belief that 'love will cure these thin distempers,' on the advice of his ministers the king married his son at an early age to Yasodhara, a beautiful princess. ('The thoughts ye cannot stay with brazen chains A girl's hair lightly binds.') She

bore him a son and they lived together for twelve years (thi Siddhartha was thirty) in a most luxurious and closely guarded prison palace. But the prince's mind still dwelt more and more on mortal ills—the pain and vanity of existence from which even death offered no escape (for Buddha accepted as unquestioningly as his contemporaries the Brahmanic doctrine of the cycle of lives). At last, breaking from his triple-guarded prison, leaving his loved wife and child, he became a religious mendicant, and for six years, what time he practised a rigorous asceticism, he studied the teachings of the Brahmins. But he was unconvinced that the 'Path' was to be found in their teaching, and less still in the self-inflicted flesh-mortifying torture of the fakirs. About this time he underwent a severe test, Mara, the prince of Darkness, seeking by fierce temptation to turn him from his quest. At last, after sitting under a tree for weeks plunged in profound meditation on the cause of things, Buddha emerged into that state of enlightenment in which he understood the cause of suffering and, consequently, its cure. The tree under which Buddha sat during his meditation is known to Buddhists as the Bodhidruma (the tree of intelligence). The spot on which this tree stood is believed by the devout to be the centre of the earth, and in the courtyard of an anct. temple in Bengal stands a pipul-tree which is claimed to be the descendant of the Bodhidruma (or, as it is sometimes called, the Bo-tree). The original Bo-tree was said by a Chinese traveller to be still standing 1200 years after the death of Buddha. The solution of his problem—the world's problem—having been vouchsafed, Buddha spent the last forty years of his life in preaching his new gospel. He returned to his wife, who became one of his first converts; converted Bimbisara, king of Madadha; and travelled widely in the N. of India. Buddha d. at the age of eighty at Kusinagara (Oudh), or, according to others, at an earlier age, viz. about 543 B.C. The new faith spread rapidly over the whole Indian peninsula, and in the third century B.C. was carried to Ceylon. Thence it spread to Burma (fifth century A.D.) and Siam (seventh century A.D.). Its ever-zealous missionaries carried the tidings even further afield, and at the present day, although Buddhism is almost extinct in the country of its origin, being unable to compete with the old Hinduism, it is the most widely spread religion of Asia. In India the Nepalese and other Himalayan tribes are Buddhists, and Buddhism flourishes in Ceylon, Burma and Siam are still Buddhist, the majority of the Chinese, many of the Jap., the Mongolian peoples of Tibet and Central Asia, and even the Tartars of S.E. Russia, are adherents of one form or another of this world-embracing faith. The number of Buddhists in Asia is estimated at 150,000,000 and there are said to be also 180,000 Buddhist inhab. of N. America, of whom about 11,000 dwell in Canada. In briefly describing the doctrines of

Buddhism It will be well to compare them with the tenets of Christianity. Only by a thorough grasp of the fundamental difference of outlook of the two faiths will the westerner be able to resolve so much that puzzles when he contemplates the E. For though it is easy to find certain superficial resemblances between Buddhism and Christianity, both in the lives of the founders of these two faiths and in their ethical teaching, yet the philosophies on which these two world systems are based are diametrically opposite. Both systems realise the inadequacy of mundane existence; both may not unfairly be termed pessimistic; but the remedy of Christianity is 'life more abundantly,' while that of Buddhism is, 'Nirvana,' or 'extinction.' Holding that existence on the whole is an evil, and that death offers no release from existence—for incarnation but leads to renewed incarnation—the Buddhist ardently desires to escape from this cycle of lives, not by annihilation, as often erroneously alleged, but by losing his individuality in the universal life. 'The Dewdrop slips into the shining Sea.' The more man 'acquired merit' in his chain of lives the sooner was Nirvana attained. At the basis of Buddhism are the Four Sublime Verities taught by Buddha, viz. (1) that pain exists; (2) that it is brought about by attachment or desire; (3) that Nirvana alone can end pain; and (4) that the way to Nirvana is only to be attained by following the 'Eightfold Path': Right Doctrine, Right Purpose, Right Discourse, Right Behaviour, Right Purity, Right Thought, Right Lowliness, Right Rapture; and by acquiring merit by these means the Law of Karma ensured a 'more rapid release from 'life's fitful fever.' All the foregoing may be summed up in the word renunciation, i.e. freedom from attachment which alone causes existence. Attachment springs from desire, and desire from sensation, which in turn is the product of ideas. So that existence is the product of ideas. Buddha taught that ideas were mere illusions, and that if man will but free himself of his illuded ideas—ideas, for example, such as the attribution of reality to transitory and imaginary things—then attachment will cease and with it unhappiness. Perhaps the most marked feature of Buddhism is not its fatalism, which it shares with other E. faiths, but the fact that the Law of Karma cannot be set aside by any divine being. Buddha was not concerned to dispute the existence of gods, but they, if they existed, were as much subject to the cycle of change as was man. Some Buddhist nations have no word in their language for 'God' in the sense of being an arbiter of the fate of man. It may sound somewhat startling to assert that one-third of mankind is atheist, and it cannot be denied that Buddha is to-day worshipped and prayed to by multitudes of his followers, but the truth is that Buddha himself never claimed to be more than a man, and taught that a man's future was solely in his own keeping. The Buddhist religion as now practised

is, however, very different from that preached by Buddha himself, and this is largely due to the competition for supremacy in India of Hinduism, Jainism, and Buddhism. The erection of *stupas* over Buddhist relics, the foundation of monasteries, the Chaityas, or halls of worship, that were later built, the belief in a succession of Buddhas and Bodhisattvas or beings who in later ages will be Buddhas, the erection of images of the Buddha, are definite stepping-stones in the development of the religion. As might be expected of a religion that has altered so greatly and is professed so widely, there are numerous forms of Buddhism practised to-day. A schism that occurred in the second century A.D. contributed largely to this: the Buddhist faith then divided into two schools, the Hinayana, or Little Vehicle, and the Mahayana, or Great Vehicle, the latter being cast in a somewhat Brahmanical mould. A Buddhist pantheon came into being; elaborate and beautiful temples and images were erected; elaborate and gorgeous ritual was practised. This is the school of Buddhism that is followed in Nepal, in Tibet, Mongolia, China, Japan, and Korea; the more southerly countries, Ceylon, Burma, Siam, Indo-China, follow the older Hinayana school. Though each belongs to the Mahayana school of Buddhism, there are, however, enormous differences between the Lamalism of Tibet and Mongolia, the Foism of China, and the Buddhism of Japan which has incorporated more than a little of native Shintoism. Consult J. L. Burnouf, *Introduction à l'histoire du Bouddhisme indien*, 1844; Sir E. Arnold, *The Light of Asia*, 1879; H. Fielding, *The Soul of a People*, 1898, and *The Inward Light*, 1908; W. A. Smith, *A History of Fine Art in India and Ceylon*, 1911; Sir C. Elliot, *Hinduism and Buddhism, an Historical Sketch*, 1921; A. Berridale Keith, *Buddhist Philosophy in India and Ceylon*, 1923; A. K. Coomaraswamy, *Buddha and the Gospel of Buddhism*, 1928; C. A. F. Rhys David, *The Birth of Indian Psychology and its Development in Buddhism*, 1936; Sir S. Radhakrishnan, *Eastern Religions and Western Thought*, 1939; G. Appleton, *Buddhism in Burma*, 1942; J. Blofeld, *The Jewel in the Lotus*, 1948.

Buddh-Gaya, or Bodhi-Gaya, vii. of Gaya dist., W. Bengal, India, dwelling-place of Buddha, resorted to by pilgrims as having once been the centre of Buddhist religion. The ruins (probably) of Asoka's palace are here.

Budding is an operation in horticulture performed for the reproduction of plants and the formation of varieties. It can be done in many ways, but the plants which are concerned in the operation must be closely related botanically, e.g. roses bud upon roses, apples upon pears, apricots upon plums, or pears upon medlars. In shield-budding a bud from the wood of the present season's growth is cut from its parent in the months of July or Aug. when the bark separates freely from the wood. The operator then makes a cut in the shape of a T in the bark of the stock near the ground, slightly loosens the bark, raises it and places inside it the bud. He

then tightly binds up the bark above and below the bud with about a foot of raffia until the bud unites with the stock, when he removes the binding. If the operation is successful the tree which has been budded is cut short above the new member in the following spring, in order that all the strength from the root may be forced into the bud. By means of B., and other forms of grafting, woody plants can be propagated much more rapidly than they can be grown from seed. Moreover the seeds of many cultivated plants do not breed true, whereas B. gives plants which are exact replicas of their parents.

Buddleia, named after Adam Buddle, is a genus of plants sometimes said to belong to the Loganiaceae, sometimes to the Scrophulariaceae, but different from plants of the latter order in possessing stipules. *B. globosa*, a native of Chile, is common in our gardens; *B. americana* is a native of Peru and the W. Indies. There are many other species.

Buddon Ness, cape on the E. coast of Angus, Scotland, with two lighthouses.

Bude, seaside resort on the N. coast of Cornwall. B. Castle was the residence of Sir Goldsworthy Gurney, who invented the Bude light. Pop. 4000.

Budé, or **Budaus**, Guillaume (1467-1540), Fr. classical scholar, b. in Paris; studied there and at Orleans, devoting himself especially to GK. He was secretary to Louis XII., librarian to Francis I., and provost of the merchants of Paris, and was also sent on sev. missions to Rome. He was a devoted student, and his numerous learned works include *De Asse*, *Annotations on the Pandects*, and *Commentarii Linguae Graecae* (1529), an extensive collection of lexicographical notes.

Budějovice (Ger. **Budweis**), the most important tn. of S. Bohemia, with 44,000 inhab., of whom 7000 were Gers. In 1939 before the Ger. invasion of that year. The cathedral was built in 1649, the walls have been replaced by a girdle of parks. It is the trade centre of S. Bohemia, its industries including Hardtmuth's pencils, chemicals, and porcelain. It was founded by Ottocar II. in 1265. The first railway in Austria (worked with horses) was constructed from Linz to B. in 1823 to supply Bohemia with salt. It is noted for its cathedral, episcopal palace and theological school.

Budge, Sir Ernest Alfred Thompson Wallis (1857-1934), Eng. orientalist; studied at Cambridge, where he won distinction in the Semitic languages. He conducted excavations at Assuan in Egypt, in the Sudan, and in Mesopotamia, and was later appointed keeper of Egyptian and Assyrian antiquities in the Brit. Museum. B. was decorated with the order of the Star of Ethiopia; knighted, 1920. He issued numerous translations from anct. Semitic tongues. His output was large and its true value remains to be appraised. His *Syriac Book of Governors* of Thomas of Marga (1893) gives a vivid picture of ninth-century monastic life in Mesopotamia. Noteworthy, too, are his annotated Ethiopic *History of Tekla*

Haimanot and his *Life of Alexander the Great* (1889) in the same language, the latter winning him the Star of Ethiopia from Menelik. He also wrote voluminously on the hist. and religion of anct. Egypt, popularising these studies in a series of cheap handbooks. *The Mummy* (1894) is one of the best known of his Egyptian works. Among his other many works may be mentioned *Assyrian Texts* (1880); *Babylonian Life and History* (1884); *The Dweller on the Nile* (1885); *Guide to the First and Second Egyptian Rooms* (Brit. Museum), 1898; *Egyptian Ideas of the Future Life* (1899); *Guide to the Third and Fourth Rooms* (Brit. Museum), 1905; *Guide to Babylonian and Assyrian Antiquities in British Museum* (with King, 2nd ed. 1908); *The Rosetta Stone and Decree of Canopus* (1910); *Hieratic Papyri in British Museum* (1911); *Cook's Handbook for Egypt and the Sudan* (4th ed. 1921); *The Queen of Sheba and Menyelek* (1921); *The Rise and Progress of Assyriology* (1925); *The Dweller on the Nile* (rewritten), 1926; *History of Ethiopia* (1928); *The Bandlets of Righteousness, an Ethiopian Book of the Dead* (1929).

Budgell, Eustace (1685-1736), Eng. writer, b. at St. Thomas, near Exeter. Educated at Christ Church, Oxford, and afterwards entered the Inner Temple, but soon gave up legal studies for literature. He was a friend and relative of Addison, and he took part with Steele and Addison in writing the *Tatler*. Contributed thirty-one papers to the *Spectator* and also contributed to the *Guardian*, writing over the signature 'X' in the former and over an asterisk in the latter. Later, he became under-secretary to Addison, chief secretary to the lords justices of Ireland, and deputy clerk of the council. When Addison became prin. secretary of state in England, he procured for B. the post of accountant and comptroller-general in Ireland (1717); but the next year he pub. a lampoon directed against the duke of Bolton and his secretary, E. Webster, which lost him his position. He was involved in the S. Sea Bubble, losing £20,000, and was suspected of forging Tindal's will by which he was bequeathed £2000. Losing the consequent law case and others, he is believed to have become insane, and eventually he drowned himself in the Thames. It was thought that he had some hand in publishing Tindal's *Christianity as Old as the Creation*, for he talked of an additional vol. on the subject. He also wrote a trans. of the *Characters of Theophrastus*.

Budgerigar (*Melopsittacus undulatus*), Australian bird of the parrot or *Psittaci* group. Popularly known as the lovebird. There are some thirty recognised shades of colour but among the more rare are white-flighted, opalines, and yellow-faced greys. See further under PARAKEET.

Budget, the account of the finances of a state, or, by analogy, of some smaller body, presented at a definite time by the responsible minister. Under the present procedure in Great Britain the chancellor of the exchequer presents his B. to the House of Commons during April. His

statement falls into two parts: an account of the results of revenue and expenditure during the past twelve months, ending on March 31, showing what surplus or deficit there has been compared with his estimates of the previous year; and an estimate of the revenue and expenditure for the ensuing twelve months, a balance being struck by the remission of old or the imposition of new taxes, with reference to the surplus or deficit on the past year.

Budleigh Salterton, urb. dist. and watering place in Devonshire, 4½ m. E. of Exmouth. Pop. 2600.

Buen, tn. of Spain, prov. of Pontevedra. Pop. about 7000.

Buen Aire, or **Buen Ayre**, see **BONAIRE**.

Buenaventura, very busy port on the Pacific coast of Colombia, disease infected, the terminus of a railway into the interior. It exports gold, platinum, pearls, coffee, and Panama hats. Steamers of sev. lines call here. Pop. 5000, of whom 90 per cent are Negroes. Rain falls nearly every day. B. was destroyed by fire in 1931, but has been rebuilt. The highway between B. and Cali (Carretera al Mar) was opened in Jan. 1944.



BUENOS AIRES

One of the many fine boulevards about the city.

Budrio, fortified coast tn. of Italy, some miles from Bologna. The churches of San Lorenzo and Sant' Agata sustained some damage in the Second World War. The Gers. mined the campanile of the former, which in its fall demolished the richly ornamented choir. Pop. 18,000.

Budrum, seaport of Asiatic Turkey, situated on the gulf of Kos, 96 m. S. from Smyrna. It was built on the site of the anct Halicarnassus, of which there are extensive ruins. Pop. 6000.

Budweis, see **BUDĚJOVICE**.

Buell, Don Carlos (1818-98), Amer. military officer, b. in Ohio. Graduated at W. Point, 1841; served in Seminole and Mexican wars, under Gens. Taylor and Scott. In the Civil war B. took part with Grant in the battle of Shiloh, and defeated the Confederate army at Perryville. Superseded for not following up his victory, he refused to hold further offices when offered to him. B. resigned his commission, 1864. He became president of Green River Ironworks, 1865-70, and engaged in mining enterprises.

Buenos Aires: 1. The largest prov. of the Argentine Republic, having a coastline of 740 m. to the E. and S. on the Atlantic, from the mouth of the Plata to that of the Rio Negro, and bounded on the N. by the R. Paraná and the provs. of Santa Fé and Córdoba, and on the W. by the ter. of La Pampa and the prov. of Córdoba. It is for the most part a plain, well watered with rivs. and lakes. Though many of these are useless for navigation, they add greatly to the fertility of the country, while the Paraná, with its estuary the Plata, and the Rio Salado, are valuable navigable streams. The only hilly country occurs in the extreme S. of the prov. The climate is mild, being considerably tempered by the Atlantic breezes. The main drawback is the Pampero, a destructive hurricane which blows from the S. in the summer. The soil is very fertile, and cereals, tobacco, and fruit are grown, but cattle-grazing (there are some 3,000,000 head of cattle) and sheep-rearing are the prin. industries. The affairs of the prov. are administered by a

governor and vice-governor, and a congress, all completely independent of the central gov. The chief tns. are the Federal cap. B.A., the provincial cap. La Plata, Ensenada, and Bahía Blanca. Area, 118,467 sq. m. Pop. (excluding the city of B. A.) 4,408,300. 2. The Federal cap. of the Argentine Republic, on the W. bank of the Plata 150 m. from the sea. Now called the Federal District of B. A., with an area of 71 sq. m. The Plata is here almost 30 m. wide, but very shallow, so that the two entrances to the docks have to be kept open by continual dredging. The city stands on a level plain, very little above sea level, and has a mild and moist climate. There is a luxurious splendour about the city, with its sunny boulevards (the chief being the Avenida de Mayo) lined with imposing buildings. Belgrano is the finest of its many suburbs. The streets are regularly laid out at right angles to each other and well lighted. Many are planted with trees, and there are numerous open squares and sev. fine parks, the most famous being Palermo Park (840 ac.), which has a motor track and flying ground. The main buildings are the Rom. Catholic cathedral (1752), the chapel of Santa Felicitas, the Casa Rosada, or Gov. House, the univ., the opera house and various gov. and municipal buildings and first-class hotels. B. A. is the terminus of the railway lines, and has excellent tramway, cable, and telephone services. Sev. thousand head of cattle are killed and chilled daily in some of the slaughter-houses in the vicinity. Away from the main streets are many thousands of families living in single rooms in narrow streets and doing their cooking on charcoal-burners in the open air. In a normal year over 3500 ships enter the port of an aggregate of more than 20,000,000 of cargo, nearly half of which is Brit. The municipal gov. is exercised by a mayor appointed by the president of the Argentine Republic with the approval of the Senate; he is assisted by a council of thirty elected members. The univ., which has an average of over 20,000 students, was founded in 1821. There is a museum and a national meteorological bureau. Air routes for mails and passengers radiate from B. A. to many stations in the Argentine Republic and to other countries. B. A. has attained its present position within the lifetime of people still living. B. A. has prospered, as indeed have so many S. Amer. cities, throughout the Second World War period. The life of the city is comparable to that of Paris before 1914. In its seaside resort of Mar del Plata more money is gambled at the tables in the three months' season than was ever gambled at Monte Carlo in three years. The suburbs of B. A. on Saturdays and Sundays give the impression of one huge sports club, where thousands of young men and women take part in every kind of game and exercise under the best possible conditions. The Club de Gimnasia y Esgrima, with a membership of 30,000, gives for a small subscription gymnasia, swimming baths, fencing, boxing, pelota courts, music and foreign

language teachers, a library and ball-room. Pop. 3,000,300.

Buff, Charlotte (1753-1828), famed in Ger. literature for winning Goethe's love, *b.* in Wetzlar. In 1772 Goethe visited Wetzlar, was often at her father's house, and fell deeply in love with Charlotte, who was engaged to Kestner and married him 1773. She was the prototype of his heroine in *Leiden des jungen Werther*, 1774. See Kestner, *Goethe und Werther*, 1854; Herbst, *Goethe in Wetzlar*, 1772, 1881.

Buffalmacco, Buonamico (1262-1340), early Florentine painter. He was a disciple of Andrea Taffi, and to him are attributed some fading frescoes in the old Badia Church in Florence. He is better known through Boccaccio and Sacchetti as a wit and practical joker.

Buffalo, the Eng. name of *Bubalus*, a genus of large ruminant mammals, belonging to the family *Bovidae* or ox family, and found chiefly in India and Africa. It is distinguished by its somewhat triangular horns, which arise close together from flattened bases set low in the skull. The Indian B. (*B. buffalo*) or Indian water B. is a heavy animal, with thick hide covered sparingly with coarse black hair, usually with long horns compressed at the base and curved in the form of a half-moon and set on a straight head, with small ears. It lives in herds in the jungles of the plains, and there are domesticated breeds. The African or Cape B. (*B. capensis*) is almost equal in size but not so heavy as the Indian B., though fully equal in strength and courage to its Indian congener, from which, however, it is easily distinguished by the fact that its horns are immensely broad at the base, where they approximate so closely as almost to meet, thereby forming, particularly in old bulls, a solid rugose mass impenetrable to bullet, and extending to the back of the head, then spreading horizontally and curving upwards and inwards to the tips, which are usually some 4 ft. apart. Like the Indian B. it is fond of the water, which it visits at more or less regular intervals during the twenty-four hours, and has a habit of plastering its head with mud which, when dried by the sun, acts as a protection from the sting of the gadfly. The African B. is the most formidable of the large game of S. Africa and is both fierce and untameable. The Amer. bison belonging to a different genus and distinguished by its humped body and small horns is often termed a buffalo (see BISON).

'Buffalo Bill,' see CODY, WILLIAM FREDERICK.

Buffalo City, co. seat of Erie co., New York, U.S.A., twelfth largest city in U.S.A., founded under the name of New Amsterdam in 1801-2 by Joseph Ellicott, agent of the Holland Land Company, slopes upon the N.E. extremity of Lake Erie. Until 1810 it retained its original name; tradition derives its present name from the herds of buffaloes that used to frequent the Buffalo Creek region. The greater probability, however, is upon the side of its derivation from the name of an Indian chief. All but destroyed in 1813

by a Brit., Canadian, and Indian force, it rose to the rank of a city in 1832, and in 1853 annexed its erstwhile rival, Black Rock. With the completion of the Erie Canal in 1825, B. rapidly advanced into the forefront of commercial importance. It has direct passenger and freight connection with the great ports of the lakes; it distributes the manufactured products of the E. to the W., and the raw products of the W. to the E.; it stands as a junction between ship and rail; and it is the port of entry of the Buffalo Creek customs dist. Ten thousand ships enter its harbour yearly and barges up to 2000 tons ply the canal from B. to the sea. The city is a municipal air port and eighteen railways meet there. It is among the prin. grain and flour markets of the world. In B. was constructed by Joseph Dart in 1843 the first grain elevator. Its horse market is the greatest in America. Among its manufs. are foundry and machine shop products, linseed oil, cars and ship construction, soap and candles, flour and grist mill products, lumber and planing mill products, clothing, iron and steel products. And amongst its industries are meat-packing, petroleum-refining, ship-building, brick, stone, and lime working, saddlery and harness-making, lithographing, the making of patent medicines and chemicals, copper smelting and refining. The value of its manufactured products in 1936 was between 700 and 800 million dollars. On the other hand, its altitude, temperate climate, excellent drainage and water supply make B. an attractive, residential city, with a pop. which has steadily and rapidly increased. It is second in pop. in New York state. It is beautifully laid out with spacious streets, most of which are bordered with trees, and with squares, and is encircled by 1030 ac. of parks linked together by boulevards and driveways. In 1901 the N. portion of the largest of these, Delaware Park, was enclosed in the grounds of the Pan-Amer. Exposition, where, in its temple of music, President McKinley was assassinated on Sept. 6 of that year. Its public and office buildings are upon a magnificent scale, the Ellicott Square building ranking with the largest office structures in the world. On Aug. 7, 1927, the International Peace Bridge, connecting B. with Fort Erie, Canada, was dedicated in the presence of the Prince of Wales and the Brit. Prime Minister. Pop. 575,900.

Buff Leather, leather of a dull, pale yellow colour, made from S. Amer. ox- and cow-hides. This leather used to be made from buffalo skins, hence the name. The best part only of the hide is used for B. L., which is very soft and pliant, and not liable to crack or rot. It is much used in the army for soldiers' belts, facings, and other purposes. The E. Kent Regiment is called the Buffs, and the second battalion of the Seaforth Highlanders, the Ross-shire Buffs, from the buff colour of their facings. The hides undergo a long and complicated process of salting and drying, cutting and scraping, treatment with cod-oil, dressing, heating,

scouring, soaking in carbonate of potash, and finally of rubbing with pumice and sand.

Buffon, George Louis Leclerc, Comte de (1708-88), Fr. naturalist, was of rich and noble parentage. His life was rigorously devoted to science, but for sometime he studied law at the Jesuit College in Dijon. Here he met Lord Kingdon, in whose company he toured in France and Italy, and travelled to England. Having built up a reputation as the translator of Newton's *Fluxions* and Hales's *Vegetable Statistics*, he was appointed keeper of the Jardin du Roi, the Fr. zoological gardens. It was probably this appointment which induced him to embark on his colossal *Histoire naturelle* (1749-67), in which Daubenton and others collaborated. Although its style is often turgid and ultra-rhetorical—it was this which Rousseau and his other contemporaries at home and abroad so frankly admired—it was, in spite of its many unsupported hypotheses, the first work to suggest the existence of evolution in the animal world. Inspired by a genuine love of learning, he undoubtedly raised the status of biological science. His membership of most of the learned societies of Europe attests his wide reputation. See L. Roule, *Buffon et la description de la nature*, 1924.

Buffonia is a genus of plants of the order Caryophyllaceae, consisting of sixteen European species. The genus received its name in honour of Count de Buffon, the celebrated Fr. writer on natural hist.

Buffs, popular name given to the old third regiment of the line in the Brit. Army from the former colour of their facings. They are now E. Kent Foot Regiment (cf. Ross-shire Buffs, name of second battalion of Seaforth Highlanders). Formed in 1685 from Eng. troops previously in the service of Holland, for some years it was known as the Holland Regiment. Served under William III. in Flanders; in Cadiz expedition 1702; then, under Marlborough, at Blenheim, Ramillies, Oudenarde, and Malplaquet, and in 1743 under George II. at Dettingen. It served with distinction under Wellington in the Peninsula. It also bears honours for Punniar, Crimean war, China war, S. Africa, 1879 and 1899-1902, and Chitral. During the First World War it raised sixteen battalions, which served in France, Flanders, Macedonia, Palestine, and Iraq. In the Second World War the B. were part of the famous Eighth Army (*q.v.*) in Italy and were in severe fighting at Termoli (Oct. 1943) and around Biferno, and later in battles across the Trigno R. A unit of the B. formed part of the Brit. garrison in Leros during the war. A battalion of the B. was one of the first to break through the Hitler line on the It. front in 1944, and a rifle battalion took the major part in clearing the Gers. from the Tavigliano area. Other units fought in Malaya in 1941-42. In the ceremony at Teheran, in which the Sword of Stalin-grad, tribute of Britain to the people of that city, was presented to Marshal Stalin by Mr. Churchill (Dec. 1943) the B. provided the Brit. guard of honour. The

Buffs received the title of E. Kent in 1782. The king of Denmark is colonel-in-chief of the regiment.

Bufo is the typical genus of the toad family Bufonidae, species of which are found all over the world except Madagascar and Australia. *B. vulgaris* is the common toad of Britain; *B. calamita* is the natterjack. See TOAD.

Bug is a term variously applied to all members of the order Hemiptera, or Rhynchota, or to those only which belong to the section Hemiptera-Heteroptera. Little is known about many of them, but over 20,000 species from all parts of the world have been classified. As they all feed on the juices of plants or the blood of mammals, they are extremely injurious to the human race. The chief characteristic of Ba, is the sucking or biting mouthparts, which are in the form of a proboscis or beak. The wings, which are absent in some species, e.g. *Cimex lectularius*, are nearly always four in number. The anterior pair in the Heteroptera have the distal half membranous and the basal half thickened, while in the Homoptera they are of the same consistency throughout. A great many of these pests are provided with *stink-glands*, which emit an extremely unpleasant odour. The rate at which they increase is enormous, the females of some species laying as many as 200 eggs in summer; it may here be noted that *Acanthosoma griesum*, a field-bug, is one of the few insects which protect and care for their young. The boat-fly (q.v.) is an aquatic species which preys on insects and fish; members of the family Capsidae feed on fruit, lichens, and grass, and cause the 'buttoning' of strawberries; others which are vegetable-feeders surround themselves with a foamy mass known popularly as 'frog-spittle.' The bed-bug is a well-known creature which infests man, preying on him by night and sucking his blood; the cinch-bug (*Blattella leucopertus*) sucks the juice of plants; the squash-bug (*Anasa tristis*) feeds on squashes and pumpkins; the cotton-stainer (*Dysdercus sutellus*) injures cotton; the family of Aradidae live under bark; and *Halobates* is a marine genus. When used in its widest sense, the term B. includes the aphidae (q.v.), cochineal and lac-dye insects.

Bug is the name given to two rivers in Russia: (1) The E. B. rises in Podolia, and flows in a S.E. direction for 520 m. It at length empties its waters into the Dnieper estuary. The chief feeders are the Ingul, Balta, Tchernai, and Solonicha. The chief towns are Bratslav, Pervomajsk, and Nikolaev. (2) The W. B. rises in Galicia. Its course of about 480 m. formed part of the E. frontier of Poland before 1940. It joins the Vistula, about 20 m. from Warsaw.

During the First World War the Russians advanced against Austria by just clearing its source, but in the counter-offensive in the autumn of 1915 the Gers. and Austrians drove the Russians across almost its entire length, and eventually a treaty was concluded at Brest-Litovsk (q.v.) on the B. The paucity of railways

running towards the B. hampered the advance considerably. The Austro-German offensive was under the Ger. F.-M. Mackensen, who succeeded in accomplishing his task in spite of heavy Russian counter-attacks. In the Second World War at the end of 1943 the Russians in their great drive of that year pressed out from the Kiev salient and threatened the Gers. with a forced retreat across the B. Early in 1944 the Russian offensive quickly gathered momentum and developed into a general advance towards the B. On March 14 a large Ger. force, was trapped near Nikolaev and the tn. fell on March 28, and the Russian advance then spread into Rumania. See EASTERN FRONT or RUSSO-GERMAN CAMPAIGNS IN SECOND WORLD WAR.

Buga, tn. of Colombia on the railway from Cartagena to Buenaventura. Coffee, cocoa, and maize are grown. Pop. 15,000.

Bugaev, Boris N., see BELY, ANDREI.

Buganda, prov. of the Uganda Protectorate. It comprises, together with is. in Lake Victoria, the dists. of Mengo, Masaka, Mubende, and Entebbe. Owing to sleeping-sickness, these is. were entirely depopulated, the inhab. to the number of 20,000 being temporarily settled on the mainland and afterwards repatriated, with their cattle, during 1921-22. B. is recognised as a native kingdom under a *kabaka*, or native king—the late chief Dawdi Chwa was grandson of the celebrated Mutesa—who is assisted in the gov. by three native ministers and a *lukiko* or native council. Each co. and dist. chief also has his *lukiko* to assist him in local gov. and in the administration of justice. In serious matters an appeal lies from these native bodies to Brit. courts.

In 1890 the Brit. E. Africa Company's officers, after Germany had repudiated the activities of the notorious Carl Peters, became the accepted advisers of the *kabaka* of B. and rendered heroic service in establishing peace and order; and in 1893, when the whole of Uganda became an acknowledged Brit. protectorate, B. was remarkable among the countries of E. Africa in having this highly developed monarchy, an institution which the Brit. preserved, doing everything possible to promote its usefulness. Bunro co. is the ancestral burial-ground of the *kabakas* of B. and the tombs of many of them are preserved. Certain coronation ceremonies of the *kabakas* are performed on Budo Hill. Entebbe is the dist. headquarters and also the seat of the protectorate gov. Mengo township contains the prin. residence of the *kabaka* and is the seat of the native gov. of B. Kampala, in the Mengo dist., is the commercial centre of the protectorate. The conurbation of which it is the nucleus comprises a number of hills each tending to be appropriated to some special purposes: Nakasero, the gov. residential area at its foot and on its summit the remains of the old gov. fort; Kilolo, which has a wireless station; Rubaga, Rom. Catholic cathedral and headquarters of the White Fathers; Makerere, where is the new college of almost univ. status and other gov.

educational establishments. In the tn. of Kampala itself the outstanding buildings are the high court fronted by gardens in which the war memorial, the gov. Indian school in old Kampala and the agric. laboratory. In the dist. of Masaka is the Buddu low-lying forest land; Mubende is a scrub-covered, scantily populated area but contains a quantity of game, particularly elephants and buffalo in Buyago and N. Singo. Pop. (1931) 881,440 (Indians 6600, the rest mostly natives).

Bugasón, or **Bugasán**, coast tn. on W. of Panay, Philippine Is., about 30 m. from San José de Buenavista. Pop. about 12,000.

Bugeaud de la Pionnerie, Thomas Robert (1784-1849), was a famous Fr. soldier, who rose from private to the rank of colonel. He took part in the Napoleonic wars; in 1815 commanded the advance guard of the army corps of the Alps. Chosen deputy for l'érigucux in the July revolution of 1830. Afterwards created marshal by Louis Philippe, who sent him into Algeria to quell the Arabs, 1837. He was appointed governor-general of Algeria in 1840, when he organised the famous Zouave regiment; after his subjugation of the Moors in 1844, received the title of duc d'Isly. Died of cholera.

Bugenhagen, Johann (1485-1558), Ger. Protestant reformer, b. at Wollin, Pomerania; studied at Greifswald; took holy orders in 1509. In 1520 he was converted to Lutheran doctrines by reading Luther's *De Captivitate Babylonica*. He matriculated at Wittenberg in 1521, and was of great assistance to Luther in his translation of the Bible. In 1524 he wrote a commentary on the Psalms, and from 1537 to 1542 was engaged in organising the reformed church in Denmark.

Bugéy, dist. in France, in the old prov. of Burgundy, now forms part of the dept. of Ain. Its cap. was Belley.

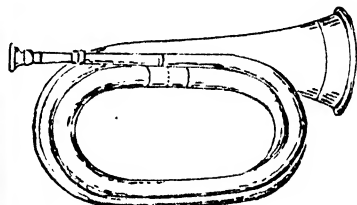
Bugge, Elseus Sophus (1833-1907), Norwegian philologist and antiquary, b. at Laurvik; educated at Christiania, Copenhagen, and Berlin. In 1866 he became the first occupant of the chair of comparative philology and Old Norse at the univ. of Oslo. His numerous authoritative works on Norse literature and archaeology, and Germanic philology, include: *Norrønt Fornkvæði*, an ed. of the elder Edda (1867); *Norrøne Skrifter af Sagnetorisk Indhold*, an ed. of the *Volsunga* and *Hervarar* sagas (1864-73); and *Lykische Studier*, 1897 (Eng. trans., 1899).

Buggy, light vehicle for one or two persons, especially in the U.S.A., India, and the colonies. Those formerly much used in America had four wheels and were drawn by two horses or sometimes one. Another type of B., less popular, had two wheels only. One kind, the Indian, is fitted with a hood, while the Amer. B. was either covered with a hood or open. The origin of the name is unknown.

Bugis are a people who inhabit Macassar and Boni in the Celebes Is., belonging to

the Indian Archipelago. They are of medium stature and of a somewhat fair colouring. They are crafty and revengeful, although they have been found to be faithful, obedient slaves, if treated well. They clothe themselves in a piece of striped cotton round the waist, and bind their hair in a coloured cloth. They trade in gold dust, nutmegs, camphor, birds' nests, etc.

Bugle, wind instrument, made of copper, with pieces of brass soldered on to the most exposed parts to prevent wear. Compared with the trumpet, its tube is shorter and more conical, and the bell less expanded. As its notes are peculiarly penetrating, it has been widely adopted for giving directions to large or scattered bodies of troops. Used at first for infantry only, it has now supplanted the trumpet for cavalry and artillery too. It is in the key of B₂, and



BUGLE

its open notes, which alone are employed in military signals, are C (below the stave), G, C, E, G. The three other notes, C (octave lower), and B₂ and C above, are somewhat ineffectual. The cornet has now quite superseded the Kent B., which was fitted with keys to increase its compass, and which at one time was one of the most popular instruments in brass bands. In spite of its difficulty, this particular B. is still a part of the B. bands of certain rifle regiments. The B. calls, contained in the drill manual, are known alike to officers and to the rank and file. One G signifies 'right,' two Gs 'centre,' and three Gs 'left,' while more elaborate calls mean 'Advance,' 'Cease Fire,' 'Assemble,' 'Charge,' etc.

Bugloss, popular name of certain plants of the order Boraginaceæ. The plant particularly known as B. is the ann. herb, *Lycopsis arvensis*, one of the weeds of cultivated ground. The B. grows wild in meadows or fields to a height of about a foot, bearing clusters of blue flowers. The plant is covered with sharp bristles. The name B. is also applied to *Echium vulgare*, or viper's bugloss (q.v.).

Buguruslan, tn. in the Kuibishev region of the R.S.F.S.R., with a railway station. Pop. 18,000.

Buhl Work, or **Boule Work**, kind of marquetry invented by a Fr. cabinet-maker, André Charles Boulle (1642-1732). It consists of a skilful inlaying of tortoiseshell, enamel, rosewood, and various

pierced metals, and has a highly decorative effect when applied to ornamental pieces of furniture. Bouille was patronised by Louis XIV., and his work is still valued by collectors.

Buhrstone, or **Burrstone**, siliceous rock deriving its name from the rough surface presented. It is largely used as millstones and for grinding, and is to be found in France, Scotland, and Wales, while there is also a Ger. variety.

Building, term used to apply either to the art and craft of erecting edifices, or to the edifices themselves. The walls of houses may be built of many varying materials, from the ice and snow of the Arctic regions to the leafy boughs of the tropics.

In temperate climes, however, a more stable edifice is required, and civilisation has given the work of erecting these edifices to different craftsmen, all of whom work together under the architect. Generally these craftsmen are mason, bricklayer, carpenter, plumber, slater, plasterer, glazier, and painter. After the site has been excavated, it is generally found necessary to put down a layer of concrete as a foundation. This varies in thickness according to the situation and state of the ground. The erection of the walls is then commenced by the mason or bricklayer, and when these have been carried a little above the ground level a damp-proof course is laid along every wall. Walls are generally built of stone or brick, and gradually get less thick as they rise from the ground. Dividing walls may be 9 or 13½ in. thick, while outer walls should not be less than 13½ or 18 in. The fixing of drains, chimneys, etc., is all included in the mason's work. Inasmuch as the principles of B. are, necessarily, very largely concerned with walls, a brief sketch of principles as applied to the B. of walls follows. As regards the durability of material for walls, clay bricks and blocks are rarely affected by acid gases or polluted atmosphere, but they may retain soot; cast stone and Portland cement concrete are only slightly affected, but all limestones are affected to some extent and calcareous sandstones are liable to be badly attacked. As to susceptibility to deterioration due to frost, the best stones are unaffected; bricks are generally highly resistant and concrete of good quality is rarely affected; but any material having a laminous structure is liable to deteriorate. Permissible stresses in walls are defined in recent B. regulations, and values are laid down for walling units of different strength according to the type of mortar used. The recently pub. *Codes of Practice for the Use of Structural Steel and Reinforced Concrete in Building* lays down requirements for panel walls of masonry, hollow blocks, reinforced concrete or a combination of these materials, in terms of thickness in relation to the clear span of the panel between frame members. The application of scientific knowledge to the problem of *sound insulation* in B. has been in progress for a number of years and much remains to be done. Broad principles have

been established, but there are still complications which make it impossible to obtain a definite solution to many of the problems of the design. The need for adequate sound insulation increases, owing largely to the changing habits of the community; the habit of flat-dwelling is an outstanding example of a trend which makes the reduction of noise all important. This is a trend which imposes great demands on the B. where there is also an increasing tendency to bring entertainment into the home in the shape of gramophone and wireless loud-speakers. But reasonable sound insulation can only be obtained by due regard to the principles underlying sound transmission; it is not possible to obtain the desired result merely by purchasing a panacea in the form of an 'acoustic material,' and success will only be secured by an intelligent combination of ordinary materials into an acoustic design type of construction. Recourse should be taken to 'double construction,' or a double partition with edge isolation. As regards strength and stability or load-bearing capacity of walls, there is much experimental data which forms the basis for recent B. codes and regulations (see, e.g., *The Model Bye-laws of the Ministry of Health*, Series IV., 1937). The permissible working pressures for different materials are laid down in these documents. As regards resistance to rain, special types of hollow blocks, with specially designed joints for the exclusion of moisture, will keep out most damp. Experiments show that, after 24 hrs., a damp patch will be found at the bottom of a wall, whatever the material; as regards normal-type hollow blocks, or 9-in. Fletton bricks in cement mortar, anything from 40 per cent to the entire wall area will be found either penetrated or damp on the surface. It is becoming a common practice in Great Britain to use reinforced concrete wall panels, monolithic with a reinforced concrete frame.

After the erection of the walls, etc., the carpenter puts in lintels, floor-joists, rafters, tie-beams, and the rest of the woodwork which is necessary at this stage. The plumber's work must now be done. He has to fix in the lead pipings, and make sure that none of the parts to be enclosed is liable to leakage. He then fixes the cisterns, baths, water closets, kitchen sinks, taps, ventilating pipes, soil-pipes, traps, etc. Either he or the gas-fitter then conveys the gas-pipes through every room. The slater then proceeds to cover the roof with slates (having first laid a layer of felt over the sarking-boards) or tiles, and if the walls require harling or rough-casting he undertakes this work. The smith has to fix all steel girders, joists, and beams, and to provide screws, bolts, etc. Laths are then nailed to the wall and ceiling-joists, allowing room for the plaster to grip between them, and the plasterer lays on three coats of plaster. He also fixes all cornices, plaster-panelling, cement floors, hearths, etc. When the plasterer has finished, the carpenter puts in the remaining woodwork—skirting-boards, cupboards, etc. Finally,

the glazier places in the glass, etc., and the painter finishes all off. See individual trades for further details. After the Second World War methods of prefabrication of houses in wood, cement, or aluminium were widely practised and developed. This permits considerable saving in building time, for the parts can be assembled quickly on a prepared site. Consult R. Fitzmaurice, *Principles of Modern Building* (H.M.S.O.), 1938; R. Greenhalgh (ed.), *The Practical Builder*, 1944; R. Sheppard, *Prefabrication in Building*, 1946; C. F. Mitchell, *Building Construction*, 1947.

Building By-laws. With the object of securing a measure of conformity with sanitary principles in the construction of buildings, various Public Health Acts vest local authorities with power to make by-laws with respect to all buildings. The Public Health Act of 1875 enacts that every urb. and rural authority may make by-laws with respect to the structure of walls, foundations, roofs, and chimneys of new buildings for securing stability and the prevention of fires, and for purposes of health; also, with respect to the drainage of buildings and to the sufficiency of the space about buildings, so as to ensure a free circulation of air and proper ventilation. The Act also enables the local authority to frame by-laws with respect to existing buildings. Where a builder contemplates building operations he is required by the by-laws of most if not all local authorities to deposit plans of his intended buildings for the approval of the local authority, under pain of having his work pulled down, if he commences to build before the local authority signifies its approval and the building is not in conformity with the by-laws. Approval or disapproval must be signified by the local authority within one month of the deposit of the plans. Consult *Model By-laws of the Ministry of Health*, 1937.

Building Certificates are given at certain stages of building operations, by an architect to a builder or contractor, who, in his turn, presents them to the employer for payment. Interior certificates are those authorising payments on account during the progress of the contract, generally up to 80 per cent of the value of the work done. On completion of the contract a certificate is usually given up to 90 per cent of the value, leaving 10 per cent outstanding as retention money. At the end of the maintenance period a final certificate is given.

Building Lease, lease granted usually for a long term of years to a builder for the purpose of erecting, improving, adding to, or repairing buildings. The term does not include leases granted on the terms of merely keeping existing buildings in repair. A B. L. may be granted prior to the commencement of the building operations, but the general practice on the part of owners of land who are developing an estate is to enter into an agreement with the builder by which the latter covenants (see COVENANT) to build and the owner covenants to grant leases at a ground rent as and when the buildings are completed

on any specified part of the land. The absence in a B. L. of a covenant to build is fatal to its validity. A mortgagor while in possession has power in the absence of a stipulation to the contrary to grant B. Ls. for a term not exceeding 99 years. So, too, a mortgagee if in possession; if not, then only by virtue of an express power to grant leases. A tenant for life under the Settled Land Acts may grant B. Ls. of the settled land for 99 years, so as to bind his successors; and may insert therein an option to purchase the freehold.

Building Society, society in the nature of joint-stock association, formed with the object of raising by the subscriptions of the members a stock or fund out of which to make advances to members upon real or leasehold estate by way of mortgage. The boon conferred is that every one who joins such a society may in course of time become his own landlord. In addition, however, B. Ss. afford a means of investment of small savings. Prior to the earlier part of the nineteenth century B. Ss. had been estab. in different parts of the United Kingdom, principally among the industrial classes, and in 1836 an Act was passed with the avowed object of encouraging and protecting such societies. Since that time B. Ss. have flourished extensively, and the benefits accruing from them, contrary to the former intention of Parliament, are no longer restricted to the industrial classes, but have afforded the medium for the profitable investment of very great sums of money and have assisted many thousands of persons in becoming the proprietors of their own houses (Scratchley and Brabrook on *Building Societies*). Under the Act of 1874 B. Ss. are either (1) terminating or (2) permanent. When the Act of 1836 was passed all B. Ss. were terminating. A *terminating* society is one which by its rules is to terminate at a fixed date or when a result specified in its rules is attained. Such a B. S. usually contains a limited number of members, to whom, as soon as the aggregate subscriptions reach a high enough amount to pay the present value of the share or shares of any one or more members, advances are made until the value of each member's share or shares is fully paid; the member who receives the advance gives a mortgage to secure the continued payment by him of his subscriptions, and when all the members have been paid the amount agreed upon as the value of their share or shares, the society automatically comes to an end. A *permanent* society is one which is not by its rules bound to terminate at any fixed date or on the attainment of any specified result. By the Act of 1874 every society whose rules have been certified under the repealed Act of 1836 may obtain a certificate of incorporation from the registrar of friendly societies and become a body corporate by its registered name. (See also CORPORATION.) This applies to both terminating and permanent societies. B. Ss. are for the most part incorporated with limited liability under the Building Societies Acts; those not incorporated act through trustees

(they are few in number and were all estab. before 1857). B. Ss. estab. since 1874, and not falling within the above category, may also become incorporated under that Act. A second B. Ss. Act was required in 1894 to restore public confidence after the financial failure of the 'Liberator' B. S. in 1892. A further setback came in 1911 with the Birkbeck Bank failure, but the B. S. movement managed to survive the First World War, as its prosperity in manufacturing centres balanced the loss in sea-coast tns. affected by bombardment, etc. After the war B. Ss. were able to cope with the universal house shortage, and in 1919 there were 1324 societies with funds of £68,000,000. Their activities increased enormously, although the number of B. Ss. was less than in 1890, owing partly to the wind-up of the old terminal societies. During the years 1919-39 the total mortgage assets of B. Ss. had increased twelvefold, reaching a figure well over £600,000,000 and the average weekly rate of advance on mortgage had reached over £2,000,000, while mortgage repayments of prin. sufficed to provide in some years as much as two-thirds of the total amount of new advances in the year. In the period 1919-39 B. Ss. advanced about £1,600,000,000 and, of a total of nearly 4,000,000 houses built since the First World War, private enterprise, with substantial grants from the funds of B. Ss., accounted for some 3,000,000, or threefold the number financed by local authorities. In each of the six boom years, 1933-38, advances were over £100,000,000, but the outbreak of war in 1939 stopped building and advances fell to £95,000,000 in 1939, and to no more than £75,000,000 for the whole period 1940-43; but, with the prospect of the war ending, prices rose and this rise was reflected in a sharp increase in advances in 1944 to £53,000,000, or double the total for the previous year. In the period 1940-44, the proportion of mortgage balances to total assets decreased from 91 to 71 per cent, with a corresponding increase in the ratio of investments and other assets from under 10 to about 30 per cent of total assets with an increase in investments in gov. securities. Reserves and profit balances rose to £50,000,000. Prevailing interest rates offered by societies to investors are from 1½-2 per cent on shares, and 1½-2 per cent on deposits (both tax paid). The purpose of the Building Societies Act, 1939, was to regularise the practice of accepting 'collateral' securities and to fix certain standards as the basis of recognised 'builders' pools.' Under the Defence (Building Societies) Regulations, July 1940, societies may demand six months' notice for repayment in respect of shares, deposits, or loans (other than bank loans), but the societies seldom had recourse to this precautionary provision during the war. To meet cases of hardship, where borrowers had joined the forces, special protection was given by statute; while the B. Ss. of their own motion arranged for modification of normal repayments and increase of the

mortgage term or temporary suspension of capital repayments. There were in 1944 817 permanent and 88 terminating B. Ss. in Great Britain with 2,039,000 and 10,000 share investors respectively, and £584,308,000 and £919,000 share capital respectively. Their mortgage assets were £560,932,000 and £900,000 respectively, and their other investments £233,357,000 and £242,000. The amounts due to depositors and other creditors were respectively £159,433,000 and £154,000. The B. Ss. Association (14 Park Street, London, W.) includes a quarter of the number, with three-quarters of the total assets, of the permanent societies. All B. Ss. must register their rules and file their accounts with the registrar of Friendly Societies and B. Ss. On an average during the post-war decade 200,000 houses were built each year, and half this number were financed by B. Ss. The B. S. movement has spread to the dominions, while in the U.S.A. a similar system prevails. See *Building Societies' Year Book*, 1927 onwards; the Registrar's Reports; and the *Building Societies' (Monthly) Gazette*.

Building Stone, stone used for constructional purposes. The use of stone quarried from the earth for the purposes of constructing dwelling-places and monuments dates from the earliest times of hist. Certain kinds of rocks have for long been selected for their suitability for building purposes. It is evidently necessary for the construction of large buildings that the stone employed should be able to withstand the very great forces called into play by the weight of the building. It should also be a stone which can be quarried easily, and which does not offer too great resistance to the mason's tools. The question of the weathering of the stone has also to be taken into account, especially in that destined to be used for the outside work of buildings in large cities. The rain-water of large tns. contains in solution a relatively large amount of carbon dioxide (carbonic acid gas), and the solution has a considerable dissolving action on building composed of limestone. It has been found that granites among igneous rocks and sandstones and limestones among aqueous rocks are most suitable for building purposes. Each of these kinds has certain properties which render it most suitable for particular kinds of work. Thus for strength and resistance to atmospheric action granite is by far the best, while marble (limestone) is chosen where beauty of colour and form is the chief property required.

Granites occur mostly in great masses, which may cover hundreds of sq. m. of country. In England the granites of Cornwall are the most important, but the Leicestershire granite (Mount Sorrell) and the Shap granite are also very widely known. In Scotland the granite of Aberdeen, Peterhead, and Ross of Mull are very largely quarried, and much granite is quarried in N. America, Canada, Norway, Sweden, and Russia. The best varieties of granite are strong, durable, impervious to moisture, and when of

suitable colour have a pleasing and ornamental effect. In Aberdeen granite is the prin. B. S., and a large amount of polished and cut granite is prepared and exported for ornamental work, both in Britain and abroad. Many of the quarries in the Brit. Is. are, however, in remote dists., and the rocks are difficult to dress.

Sandstone is similar in composition to sand, but its grains are cemented together usually by silica. Pure sandstone is white or pale yellow in colour. It is usually very hard and capable of withstanding weathering. It is perhaps the most widely used of B. Sts.; there are few of our large cities in which it is not seen. A good example of a sandstone of tough quality, pure colour, and great durability is the Craigleith stone. Ferruginous sandstones have a yellow, brown, or red colour, and are used to a large extent for building, as they are easily dressed and can be obtained in large quantities. Less durable than granite and less easily weathered than limestone and marble, sandstones are excellent for all architectural purposes. They must always be laid with their original bedding horizontal, as in that way they weather most regularly.

Limestones consist of calcium carbonate with various admixtures. They weather readily, especially when exposed to the acid smoky atmosphere of tns.; they are, however, much used in building, e.g. Bath stone and Portland stone. Bath stone is an example of limestone of the Oolitic formation; it is easily quarried, but is not of a very durable nature. The famous Portland stone, which came into favour early in the eighteenth century, furnished the material for St. Paul's Cathedral and the present Houses of Parliament. Magnesian limestone, or dolomite, occurs in varying qualities, and much of it affords good building material. The siliceous dolomite of Mansfield has been used in many important buildings. Crystalline limestones, or marbles, are invaluable for statuary purposes, Carrara in Italy producing the finest kind. They are suitable for interiors, but although fine in effect are very costly and unable to withstand the smoke of tns.

No stone will resist the action of atmospheric agencies for all time, and, in modern conditions, pollution is a formidable factor in causing decay. Errors in design or in the use of inappropriate methods of cleaning or restoration, may hasten decay. 'Vents' or fissures, especially in a highly decorated building, are also a source of danger, as is exemplified in the case of the Auston stone of the Houses of Parliament and Westminster. Iron cramps may also damage stonework, as it has done in the case of St. Paul's Cathedral. For the most useful preventive measures see *The Weathering of Natural Building Stones*, pub. by the Dept. of Scientific and Industrial Research (H.M.S.O.), 1932. See also J. Watson, *British and Foreign Building Stones*, 1911.

Builth Wells, urb. dist., par. (Builth), and tn., co. Radnor, Wales, with three mineral springs. Pop. 1777.

Bulrette, Pierre Laurent, see BELLOY, DORMANT DE.

Buitenzorg, tn. and summer resort in Java, Dutch E. Indies. It is the cap. of an assistant residency. It is 36 m. S. from Batavia by rail, situated in very hilly country, and possesses a particularly fine climate. The merchants reside here in the summer months. There are the palace of the governor-general and some famous botanic gardens. Pop. 65,000.

Bujalance, tn. of Cordova, Spain, 24 m. E. of Cordova. It has manufs. of woollens, leather, etc. Pop. 12,000.

Bujnurd, tn. in Persia, in prov. of Khorassan; fertile soil; inhab. chiefly Kurds; pop. about 8000.

Buk'á, El, see CELE-SYRIA.

Bukharest, see BUCHAREST.

Bukkur, is. of the Indus, in Sindh, lying between Rori and Sukkur on the riv. banks. Formerly a military post, it is now important as a support of the railway cantilever bridge built in 1889.

Buknfjörd, in Norway, situated in the prov. of Stavanger on the N.W. coast; this fjord runs inland 35 m., and is 10 to 15 m. broad.

Bukoba, port, a station on the W. bank of Lake Victoria, Tanganyika Ter.

Bukovina, before the First World War, was a duchy and crown-land in the Cis-leithan div. of Austria-Hungary. After that war it was incorporated in Rumania. But on June 27, 1940, in compliance with a Russian ultimatum, N. B. (together with Bessarabia) was ceded to the Soviet Gov. By the terms of the armistice of Sept. 12, 1944, between the Allies and Rumania this cession to Russia was confirmed, and it became the Chernovitsi Region of the Ukrainian S.S.R. Rumania, however, retains S. B. B. is bounded on the N. and N.W. by Galicia (formerly Poland), on the E. by Moldavia, on the S. by Rumania, and on the W. by Hungary.

Originally a part of Moldavia, B. was annexed to Austria in 1775. During the First World War the Russians made a great advance through B. in the summer of 1916. At this time Rumania was in a state of indecision, and a Russian success in these parts was therefore of great political importance. At the beginning of June 1916 Brusilov (*q.v.*) struck at the Gers. about the Pripet, while Lechitsky made rapid advance into B., capturing Czernowitz, the cap., on June 17. By the end of June the Russians had driven out the forces of the Central Powers and were pressing towards Lemberg. Kutý fell to Lechitsky, and this paved the way for his capture of Kolomea, after which, however, he was compelled to halt, and in the following summer the Central Powers took the offensive in this area and gradually forced the Russians back on Czernowitz. On Aug. 3, 1917, the Russians were pressed on the N. and S., and had to surrender the cap. and retire to the frontier pursued by their enemy. It is an extremely mountainous dist., containing a portion of the Carpathian range, and almost half of its

surface is covered with forest. The soil is very fertile, and much fruit is grown in the riv. valleys. The only mineral wealth is salt and manganese. The area of B. is 4031 sq. m., and the pop. 845,000, mainly Ruthenians and Rumanians. The chief tn. is Chernovitsi (formerly Cernauti, Chernowitz). B. has one of the four archbishoprics of the Orthodox Church of Rumania. A univ. was founded in 1920. Salt is an important produce, the salt mines in the Lower Carpathians from B. to the W. of Oitenia covering an area of over 250 sq. m.

Bulacan: 1. Prov. of Luzon, Philippine Is. A hilly dist., containing spurs of the Caraballo Mts., and watered by the Pampanga R. The soil is fertile and there is considerable mineral wealth. Area, 1173 sq. m. Pop. 249,000. 2. Tn. in above prov. on the Pampanga delta, 15 m. from Manila. Pop. 12,000.

Bulair, Isthmus, neck of land connecting the Gallipoli Peninsula, with Turkey at its N. end. When the Anglo-Fr. army landed on the S. portion of the peninsula in April 1915, the Turkish reserves were situated at B. A landing here was contemplated, but not attempted.

Bulak, see BOULAK.

Bulandshahr: 1. Dist. of Meerut div., United Provs. of India, lying between the Jumna and the Ganges. Exports cereals, indigo, and cotton. Area, 1915 sq. m. 2. Cap. of above dist., 40 m. S.E. of Delhi. A place of great antiquity. Pop. of dist. 1,066,000, of tn. 20,000.

Bularchus, a Lydian, is mentioned by Pliny as the painter of a large picture representing the capture of Magnesia (716 B.C.). It is said that Candaules, king of Lydia, purchased this painting for its weight in gold. It is likely that the school of painting in Asia Minor arose earlier than the Peloponnesian war, since the Phœnicians, who had long worked in colour, were close at hand. B. of course painted in tempera, and used only the simple colours, the art of mixing colours to make other shades being little known to the Gks.

Bulawayo, or **Buluwayo,** cap. of Matabeleland and commercial cap. of S. Rhodesia. It stands on a table-land between the Limpopo and Zambesi Rs., 676 m. by railway W. of Beira, the nearest port. Rich gold-reefs are mined in the neighbourhood and coal also is to be found. B. is the most important railway centre in S. Rhodesia, and the headquarters of the Rhodesian and the Beira and Mashonaland railways. It is surrounded by a wide expanse of excellent grazing country. From these facts the importance of the tn. may be gauged. Its site was selected in 1893, and is 3 m. N. of the old royal kraal of Lobengula, which was the headquarters of the Matabeles. To this fact B. owes its name, which means 'the place of the killing.'

The *indaba* or judgment tree has been left standing. During the Matabele wars of 1896, B. was successfully defended, and the tn. now contains a monument in memory of the colonists killed on that occasion. Like most of the S. African tns., B. is built on the rectangular system around a market square, the thoroughfares running from N. to S. being streets, those running from E. to W. being avenues. Among the prin. buildings are the gov. house, once the property of Cecil Rhodes, the municipal buildings, market house, court house, memorial hospital, library, and museum. The last, which was opened in 1910, contains objects found at Zimbabwe and other auct. ruins in Rhodesia. The Matjesumshlope R. runs along the E. side of the tn., and its valley has been converted into two fine parks; in N. Park is a zoological garden. The Rhodes estate, now a gov. experimental farm, 115,000 ac. in extent, lies 5½ m. from B. In the neighbourhood are the Matopo Hills, where Rhodes and Jameson were buried. A huge bronze statue of Rhodes by the late John Tweed stands in Main Street. Bushman paintings are to be found in the vicinity, and 14 m. to the W. of the tn. lie the Khauri ruins of unknown antiquity. Pop. (including suburbs) 52,700 (including 17,500 Europeans).

Bulb is the name given to a specialised underground bud which consists of a short, thickened stem surrounded by a number of overlapping leaves which contain reserve material for the next season's plant. Adventitious roots grow at its base, and usually small buds arise in the axils of the innermost leaves. The Bs. of the onion and hyacinth are said to be *tunicated*, i.e. the leaves completely enwrap the modified shoot like a tunic; the bulb of the lily is *scaly*, or *imbricated*, i.e. the leaves merely overlap one another. The crocus *bulb* is in reality a *corm*, or solid fleshy stem bearing membranous leaves.

Bulbous Plants are those which spring from a bulb, and are usually found wild in light sandy soil, in sheltered places. When the season is wet they develop rapidly, but when the seeds are ripe the leaves wither, and the bulb falls into a state of rest for half a year. The young plant at first feeds upon the food material which has been stored up in the fleshy leaves. Examples of such plants are the tulip, hyacinth, lily, and onion.

Bulbul, Arabian and Persian name for a species of nightingale (probably *Luscinia hafizi*) introduced by Moore and Byron into Eng. poetry.

Buldana, dist. and tn. in W. Berar, India, with fertile valleys. Chief tns.: Khamgaon (28,000) and Malkapur (20,000). Pop. (dist.) 750,000; (tn.) 8000.

Bulford, vil. of Wiltshire, England, on the Avon, 2½ m. to the N.E. of Amesbury. Has a large military camp.

